

UNITED STATES OF AMERICA

V.

PASS MINERALS INC.,
KIMINCO INC.,
PILOT PLANT INC.,
K. IAN MATHESON

MAY 8, 2003

DECISION OF THE ADMINISTRATIVE LAW JUDGE

JUDGE HARVEY C. SWEITZER



IN REPLY REFER TO:

United States Department of the Interior

OFFICE OF HEARINGS AND APPEALS

139 East South Temple, Suite 600
Salt Lake City, Utah 84111
Phone: 801-524-5344

May 8, 2003

UNITED STATES OF AMERICA,	:	N-66052
	:	
Contestant	:	Involving the Mijo Nos. 16 and 17 Placer
	:	Mining Claims situated in Section 14, T.
v.	:	23 S., R. 63 E., Mount Diablo Meridian,
	:	Clark County, Nevada
PASS MINERALS INC., KIMINCO	:	
INC., PILOT PLANT INC., K. IAN	:	
MATHESON,	:	
	:	
Contestees	:	

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**FIELD SOLICITOR
SALT LAKE CITY, UTAH**

DECISION

Appearances: John W. Steiger, Esq., Salt Lake City, Utah, for Contestant

K. Ian Matheson, pro se, Henderson, Nevada, for Contestees

Before: Administrative Law Judge Sweitzer

On November 16, 1999, the Bureau of Land Management (BLM), United States Department of the Interior, filed a Complaint challenging the validity of the Mijo Nos. 16 and 17 placer mining claims on three grounds: (1) that “[m]inerals have not been found within the limits of the claims in sufficient quantities and/or qualities to constitute a discovery of a valuable mineral deposit”, (2) that “[t]he claims are nonmineral in character”, and (3) that “[t]he claims are not held in good faith.” Named in the Complaint as Contestees are Pass Minerals, Inc., Kiminico, Inc., K. Ian Matheson, Pilot Plant, Inc., Rick J. Vincent Sr., Luther Hendrickson, Brookline Mining Co., Arby J. Vincent, and James T. Roe, III. Because the latter five Contestees failed to answer the Complaint, the allegations of the Complaint are deemed admitted by them and the contest was dismissed with respect to them (see Tr. v. 1:15).¹ 43 C.F.R. §§ 4.450-7(a), 4.451-2. The remaining Contestees (hereinafter referred to as “Contestees”) filed an answer - a three-ring binder labeled “Discovery” - which is not to be considered as evidence (Tr. v. 1:16-17).

¹Because the transcript is not consistently paginated consecutively, references to the transcript include both the volume number and page number(s) separated by a colon.

Total presentation of the case consumed 41 days of hearing intermittently scheduled between April of 2000 and February of 2002. Thereafter, extended periods were allowed for submittal of briefs.

The parties filed post-hearing briefs in support of their respective positions. This Decision incorporates portions of Contestant’s briefs where deemed apropos, without further attribution herein. Contestees’ briefs improperly cite certain proposed exhibits which were not received in evidence (e.g., proposed Exhibits A-69, A-72, A-180, A-181, and A-186) or exhibits received into evidence only for a limited purpose (e.g., Exs. A-51, A-130, A-157, A-171; see Tr. v. 30:4216-18; v. 31:4331-34) and not for the truth of the matters expressed therein (e.g., Exs. A-24, A-51, A-76, A-130, A-171; see Tr. v. 13:2218-23; v. 31:4331-34).

Having reviewed and considered all evidence and briefs, and for the reasons set forth below, I must conclude that the subject placer mining claims are invalid for failure to make a discovery of a valuable mineral deposit. Therefore, it is not necessary to determine whether the claims are nonmineral in character or whether the claims are not held in good faith.

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STATEMENT OF FACTS

According to Mr. Matheson, the pro se representative of Contestees, who also testified, the Mijo Nos. 16 and 17 claims (Mijo claims) are owned by Contestee Pass Minerals and Contestee Kiminco, respectively (Tr. v. 2:479). The shareholders of Pass Minerals are Contestee Pilot Plant, Kiminco, and a defunct company called Pure Air (Tr. v. 3:579). The shareholders of Kiminco are Mr. Matheson, his wife Debra Matheson, and Pilot Plant (Tr. v. 3:579). The shareholders of Pilot Plant are Mrs. Matheson’s three children (Tr. v. 2:480, 482). Consequently, the ultimate beneficiaries of any monetary gains derived from the Mijo claims are Mr. Matheson and his family.

The Mijo claims lie within the Alunite Mining District (Ex. 2, p. 5). From 1908 to 1937 there was minor gold prospecting and very minor gold production about one to two miles northeast of the Mijo claims (Ex. 2, pp. I, 5). There is no reported history of precious metal interest on the Mijo claims (Ex. 2, p. I).

The claims are situated on an alluvial fan on the northern edge of the Eldorado Valley, about two miles southwest of Boulder City, Clark County, Nevada, and two miles due south of Railroad Pass, which is not far from Las Vegas, Nevada (Ex. 2, pp. 2-3, Map 3). Each claim is 160 acres, with the Mijo 16 claim bordering the Mijo 17 claim to the north (Ex. 2, p. 1, Map 1). Overlapping the Mijo 16 claim and extending to the east thereof is the Becki M mill site claim held by Contestee Pilot Plant (Ex. 2, p. 2; Ex. HH; Tr. v. 3:734-35; v. 23:2849-50).

As more fully described below, the development of the Mijo claims has been interconnected with the development of hundreds of mining claims at the southern end of the Eldorado Valley (see, e.g., Tr. v. 31:4264; v. 33:4671-72). The Eldorado Valley is approximately 30 miles long (running north to south) and 10-12 miles wide (east to west) and the Mijo claims are 27 road miles to the north of the claims in the southern portion of the valley (Tr. v. 1:24-25, 50-51). It is Contestees' contention that the Mijo claims contain gold, silver, and platinum group metals (PGM's), that the gold cannot be reliably detected by standard fire assay for various reasons, including that the gold is colloidal and encased in highly refractory materials, that the claims in the southern portion of the valley contain gold of a similar nature, and that extensive testing was undertaken to develop techniques for processing the material from the valley so that the gold can be assayed and recovered.

Pass Minerals also has an interest in 300 mining claims in the nearby Paiute Valley (Tr. v. 23:2871). Mr. Matheson has always intended to combine operation of the Mijo claims with operation of the Paiute Valley claims as a way of validating the Paiute Valley claims (Tr. v. 23:2872).

The Mijo claims were located on December 16, 1983 (Ex. 2, p. 1). The land encompassed by the Mijo claims was withdrawn from mineral entry on June 6, 1994, for purposes of a proposed land exchange (Ex. 2, p. 3; Tr. v. 9:1570-73; v. 38:5758-59). Prior to expiration of that withdrawal, the land was withdrawn by another segregation on July 23, 1997, which provides that it shall expire in five years (Ex. 2, p. 3; Tr. v. 9:1571; v. 38:5759). Both segregations were timely noted on the Master Title Plat (Tr. v. 39:5758-59).

In January 1996 Mr. Matheson asked BLM to terminate the segregation with respect to the Mijo claims because he believed that the land encumbered by the Mijo claims was no longer being actively considered for inclusion in the land exchange (see, e.g., Tr. v. 16:2935-36; Exs. A-148, A-150, A-185). While his belief might have been accurate at that time (compare Ex. A-148 with Tr. v. 9:1572-73; v. 38:5790-91; v. 39:5803), Mark Chatterton, the Assistant Field Manager for Nonrenewable Resources for BLM's Las Vegas Office, testified that the proposed land exchange is still being considered, that all the lands segregated are still being considered for inclusion in the exchange, and that it is BLM's policy not to take lands out of segregation that were originally proposed for a land exchange until the land exchange is completed (Tr. v. 9:1572-73; v. 38:5760, 5790-91; v. 39:5802-03). The policy is in place because lands are often added or removed right up until the time that a patent is issued completing the exchange (id.).

Mr. Matheson first visited the Mijo claims in 1988 (Tr. v. 32:4422). That year he also began working with Jerry Henderson, who conducted 250 tests on material from the Eldorado Valley and developed plans for a pilot plant to process the material.

Through those tests Mr. Henderson became the first person to generate assay results showing the presence of PGM's and fire assay results indicating substantial amounts of gold. The fire assay results were achieved by reassaying each sample six times. (Ex. A-142; Tr. v. 13:2270-74; v. 27:3596, 3609; v. 31:4568-80)

Mr. Henderson reported that he consistently recovered silver, gold, and PGM's in ounces per ton of 30.0, 1.5, and 2.0, respectively (Ex. A-142). However, Contestees failed to show that these reported results were for samples from the Mijo claims (Tr. v. 23:2748; v. 31:4353-55; v. 32:4425-30).

Mr. Matheson became interested in the Mijo claims in 1987 when he met Arby Vincent, Jr. (now deceased) (Tr. v. 13:2258-59). Mr. Vincent was one of the co-locators of the Mijo claims, operated a lab out of a garage in Henderson, Nevada, and owned the Becki M mill site claim until he sold it to Contestee Pilot Plant in approximately 1994 (Ex. 2, Atts. 2-2a, 2-2b; Ex. 37; Tr. v. 4:862-63; v. 26:3442-43).

He also owned a substantial number of claims in the southern portion of the Eldorado Valley until he sold them to Dr. Charles Ager in June 1993 (Tr. v. 13:2349-52). Mr. Matheson facilitated that sale (Tr. v. 25:3297-99).

The digging of trenches on the Mijo claims in 1986 and 1987 by Mr. Vincent is discussed in his affidavits of annual assessment work and by Mr. Matheson in his testimony, but there is no indication that his testimony is based upon personal knowledge. Mr. Vincent reportedly used a backhoe in 1986 to dig 10-foot-deep trenches on the Mijo claims from which 3 tons of "ore" was removed (Ex. A-195, p. 122; Tr. v. 41:6267). The "ore" reportedly was then hauled to the Becki M millsite, screened, and four 500-pound samples per claim were processed to determine the gold values (Ex. A-195, p. 122).

In 1987 Mr. Vincent reportedly used the backhoe to dig 16 trenches, one in the middle of each 20-acre parcel within the Mijo claims (Ex. A-195, pp. 124-25; Tr. v. 41:6219-20, 6244, 6267). The trenches were 10 feet long by 2 feet wide by 5 feet deep (Ex. A-195, pp. 124-25; Tr. v. 41:6244). Mr. Vincent attested that a channel sample was taken from each trench and then each trench was backfilled and reclaimed (Ex. A-195, p. 124; Tr. v. 41:6219).

Whether the trenches were actually dug is questionable, given two factors. First, the evidence thereof is hearsay. Second, BLM mineral examiner, Burrett W. Clay, testified that there is no evidence of the purported trenches in the aerial photographs of the Mijo claims taken in April 1990, June 1994, and September 1999 (Tr. v. 40:6022-27).

However, his testimony was based, in large part, upon the absence of evidence of loss of

vegetation, yet he did not reference aerial photographs which pre-dated the digging of the trenches to assess the vegetative community prior to the alleged disturbances. Consequently, his testimony must be discounted to some degree. In any event, this factual dispute need not be resolved because it is immaterial.

At approximately the same time - from May 1986 to April 1987 - Robert Gunnison used equipment at the Becki M millsite to process samples of head ore taken from the Mijo claims, including samples taken by Mr. Vincent, and samples from the southern Eldorado Valley claims (see, e.g., Ex. 17, p. 22; Tr. v. 4:849-52, 855-56; v. 7:1041-45; v. 19:3410-16; v. 31:4401-06, 4461-62; v. 41:6220). Mr. Gunnison processed the samples using a thiourea leach process known as the "Gunnison Process", which he claims is proprietary (Ex. 17, p. 22; Tr. v. 10:1800; v. 15:157-58, 164-65, 170-74).

According to Mr. Matheson's hearsay testimony, Mr. Gunnison processed and assayed 2,500 to 3,000 samples, each weighing between 500 and 1,000 pounds, from drill holes within the southern claims and 5 to 12 head ore samples, each weighing 500 pounds, from the Mijo claims (Tr. v. 14:29; v. 26:3373-75; v. 31:4401-05; v. 32:4424, 4457; v. 41:6226-27). A substantial amount of tailings should have been generated from the processing of that poundage and should be visible in aerial photographs if deposited at the mill site, yet none were observable in aerial photos nor by Mr. Matheson when he began visiting the site (Tr. v. 32:4461-62; v. 40:6016-17). Nor did Mr. Matheson observe any evidence of a settling pond, despite the fact that each 500 pound test required 120 gallons of water (Tr. v. 32:4461-62).

Mr. Gunnison reported that about 75% of the assays for the samples from the southern claims contained commercial gold and that the assays for the Mijo samples also detected gold values (Ex. 17, p. 22; Tr. v. 31:4404-05). Mr. Matheson testified that Mr. Gunnison was reporting gold values from these bulk samples in the range of 0.15 to 0.20 oz/ton, but later identified 24 assay values averaging only about 0.08 oz./ton from samples taken outside the Mijo claims (Tr. v. 32:4452, 4458, 4464).

The drilling on the southern claims was conducted by Plenty River Mining Company N.C. (see, e.g., Ex. 17, p. 22; Tr. v. 19:3410-16). From 1986 to 1988 Plenty River spent approximately \$6,000,000 on drilling programs and operation of a pilot plant within the southern Eldorado Valley in an effort to locate and recover gold pursuant to joint venture agreements with companies formed by James T. Roe III (Ex. 17, pp. 21-22). Mr. Roe owned claims in the southern part of the valley and was one of the co-locators of the Mijo claims.

Plenty River built a pilot plant, based upon the Gunnison Process, after receiving the results of the assays conducted by Mr. Gunnison (Ex. 17, p. 22). After the pilot plant obtained uneconomic results, Plenty River abandoned the effort and commenced legal action to recover some of its expenditures, alleging that the gold values were uneconomic and significantly below the values claimed by the previous proprietors and joint venture partners (Ex. 17, pp. 21-23; Ex. 77, p. 1; Ex. 78, p. 1).

The record also contains Mr. Vincent's affidavits of annual assessment work on the Mijo claims for the period of September 1987 through September 1992, with the exception of September 1988 through September 1989 (Ex. A-195, pp. 127-33). The affidavits identify the assessment work as development work, including constructing, equipping, and maintaining a research and testing laboratory, drilling, trenching, bulk sampling, loading and hauling, screening, concentrating, metallurgical testing, bulk sample processing, and backfilling any trenches or drill holes (id.).

In 1987, Mr. Gunnison ceased using the equipment on the Becki M mill site (Tr. v. 31:4401-02). That equipment was owned by Mr. Vincent and sat idle until Eugene Phebus, one of Contestees' witnesses, refurbished the equipment in the summer of 1990 (Tr. v. 31:4401-03; v. 30:4055; Ex. A-144).

That refurbished equipment became part of a test processing facility at the Becki M mill site. After refurbishing the existing equipment, Mr. Phebus began building or adding new equipment, concentrating the head ore, and conducting hundreds of tests to improve the effectiveness and efficiency of the processes for concentrating and assaying/recovering precious metals from material taken from the Mijo claims and the southern Eldorado Valley claims. He experimented with using different grinding, concentrating, and furnace systems, leaches, flux combinations, airflow adjustments, assay temperatures, and pre-washes or pre-treatments. (See, e.g., Tr. v. 3:734-36, 739, 743-44, 750, 765, 782; v. 5:868-70, 875, 902-15; v. 6:938-43, 956-62, 966-71, 992-93, 996-98; v. 7:1040, 1042, 1046-48, 1052-53, 1073, 1088-89, 1092-94; v. 30:4074-76; Ex. A-144)

Mr. Matheson testified that this experimentation was part of a larger effort to determine the best methods for concentrating and assaying/recovering precious metals for material taken from the Mijo claims and the southern Eldorado Valley claims (see, e.g., Tr. v. 13:2235, 2263). This effort was spurred, in part, by the alleged fact that substantial amounts of precious metals could not be detected in the material by standard fire assay methods (see Tr. v. 3:747-48; v. 5:37-38; v. 6:1002; v. 8:1448-49).

According to Mr. Phebus, three large pits, each approximately 200 feet by 800 feet, with an average depth of 6 feet, were dug on the Mijo claims using a backhoe during the fall of 1990 (Tr. v. 22:2570; v. 29:3952-56; v. 41:6227, 6244; Exs. HH, A-129, A-183). He testified that these pits were used as major testing areas from which samples were taken and run through a screening plant for three or four years (Tr. v. 29:3928, 3946, 3952-56; v. 38:5602-04, 5625-28).

The screening plant was often used in conjunction with a magnetic separator (Tr. v. 3:747; 7:1040). The screened material was processed through the magnetic separator to obtain a magnetic concentrate referred to as "dirty mags" (Tr. v. 3:747; v. 32:4491-97). Material from the screening plant was then processed through the test facility at the Becki M millsite, with Mr. Phebus varying the procedures and pieces of equipment used (see, e.g. Tr. v. 6:956-62).

With regard to assaying and record keeping, Mr. Phebus testified that he did not consider

himself to be an assayer, relied upon others to a large extent to conduct assays, and depended upon others to record the assay data, either in assay sheets or lab books (Tr. v. 4:862-64; v. 6:962-65; v. 29:3911, 3925-26, 3961-77). He was concerned not with determining precise precious metal values but with improving the processing equipment and methods and producing precious metals (Tr. v. 6:962-65; v. 7:1063).

Gene Smith, who worked for Mr. Matheson, was in charge of quality control and kept the lab books, which reportedly included both assay data and sampling locations (Tr. v. 4:862-64; v. 29:3961-62, 3967-70, 4031). Much of the assaying was conducted at Mr. Vincent's lab, as Mr. Phebus did not assemble an assay lab at the Becki M mill site until 1992 (Tr. v. 4:862-64; Ex. A-144).

Mr. Phebus testified that he took approximately 3,000 samples from the Mijo claims (Tr. v. 29:3900, 3959). Many samples reportedly were taken from 6- to 8-foot deep holes dug on the Mijo 17 claim with a backhoe in a grid pattern spaced 200 feet apart (Tr. v. 7:1090; Ex. A-129, p. 1). He estimated that 60 to 80 percent of the samples were taken by December 1991, during the first 18 months he worked on the claims (Tr. v. 29:3901; v. 30:4054).

Many samples were also taken from a 10-foot by 10-foot area near a survey stake that marks the point where the southeastern corner of the Mijo 16 claim and the northeastern corner of the Mijo 17 claim meet (Tr. v. 28:3763-64, 3769-70). That sample area is referred to as the Mijo 16/17 corner.

According to Mr. Phebus, he produced 1,800 pounds of dore bars and anode mud by processing material taken from the Mijo claims in 1990 and 1991. He testified that the dore bars were derived from concentrating samples, most weighing 250 pounds, which were then smelted in furnaces rented from Mr. Henderson. Some of them were leached before smelting and others were not.

He further testified that the poundage was shipped to James Metallurgical Services, Inc. in Abbotsford, Canada, where he worked in 1998 for approximately four months. During that time he reportedly refined some of the dore bars to remove impurities. He estimated the value of one bar to be \$32,000.

He initially testified that none of the precious metals were sold and that he still had them. Later, he testified that one bar was sold for over \$12,000 in Canadian money and that 60 to 70 percent of the 1,800 pounds of material was left in Canada, including some gold which was eventually sold.

However, there is no record of the \$12,000 sale or other sales. He recalled that the alleged \$12,000 bar was processed without leaching, using a standard flux and smelting procedure. (Tr. v. 6:878-884, 960-62, 1002-06; v. 34:4878-90, 4896, 4932-33, 5043-57; v. 38:5613-5623)

According to Mr. Matheson, he providing funding of \$287,000 to develop the claims by mid-1991 and over \$300,000 prior to purchasing the Mijo claims (Tr. v. 29:3863; v. 31:4244, 4246, 4286; v. 41:6260). Mr. Matheson testified that some of the money was expended to support Mr. Vincent's lab (Tr. v. 22:2676). The date of Contestees' acquisition of the Mijo claims was never identified, but the likely time frame is the later half of 1995 because Mr. Vincent, as the "claimant", signed an Outline for Mining Notice on July 15, 1995 (Ex. 46) and Mr. Matheson identified 1995 as the year of acquisition in his posthearing brief.

Mr. Phebus and other personnel excavating and processing material from the Mijo claims were paid by Mr. Vincent during 1990 and 1991. Mr. Phebus stated that he has lived at the Becki M mill site since July 1990, but periodically stayed at his home in "Prump" as well (presumably a reporter misspelling of Pahump, Nevada) (Tr. v. 3:734; v. 6:862-63, 1009; v. 7:1094-95). Since mid-1991, neither Mr. Phebus nor any other worker on the Mijo claims has received a salary (Tr. v. 6:1007-08; v. 7:1020-22, 1066).

Instead, Mr. Matheson promised various individuals, including several of Contestees' witnesses, that they would be compensated or receive a piece of the pie once the claims were generating a profit (see, e.g., Tr. v. 18:1393; v. 22:2675-76, 2679-83). Those individuals included Mr. Gunnison and Mr. Phebus (Tr. v. 3:735; v. 6:1008-09; v. 7:1022, 1068; v. 18:1393; v. 22:2675-76, 2679-83).

Based upon the first couple hundred assays done in 1990, Mr. Phebus estimated that the average assay results for gold for the head ore and for the concentrate (concentrated by magnetic separation) were 0.15 oz/ton and 2.0 oz/ton, respectively (Ex. A-129, pp. 1-2; Tr. v. 29:3959, 3962-66). These estimates were based upon assays conducted by Mr. Phebus, Mr. Vincent, and others using a variety of assay techniques (Tr. v. 29:3968-77). The average assay results have risen since then, according to Mr. Phebus (Tr. v. 29:3964-66).

Both he and Mr. Matheson testified that the magnetic concentrate could not be assayed consistently until 1991, when they began using an assay process known as the Belgian Process (Tr. v. 7:1078-80; v. 13:2241). According to Mr. Matheson, the Belgian Process is the assay procedure used by a Belgian assayer, Union Miniere, to assay a sample from the Mijo 16 claim in approximately December 1990.

At that time he placed an 80-pound sample of magnetic concentrate from the Mijo 16 claim into a 5-gallon bucket and sent it to Union Miniere (Tr. v. 3:752-762; v. 13:2241; v. 26:3499; Ex. A-129, p. 2). Mr. Matheson testified that the sample assayed at approximately 10 ounces of gold, 10 ounces of palladium, 4 ounces of platinum per ton of magnetic concentrate (Tr. v. 13:2344-45).

Mr. Matheson further testified that he was encouraged by the assay results from Union Miniere and therefore asked Union Miniere to send him its assay procedure. According to Mr. Matheson, he received the procedure by fax and re-typed it as Exhibit A-16, but there is no documentation of the original transmission of the procedure (see, e.g., Tr. v. 26:3507-11;

v. 31:4357-60).

Various witnesses for Contestees testified that the Belgian Process differs from a standard fire assay in one or more of the following aspects: (1) a greater amount of flux is used, (2) different types of fluxes are used, (3) a large amount of silver is used as an in-quart, (4) the furnace is set at a higher temperature (somewhere between 2,100 and 2,700 degrees), (5) the holding times during firing are longer, and (6) multiple firings are required, with the slag being broken up and refired after each firing (Tr. v. 3:640-41, 647-48, 671, 689, 752-62; v. 5:110-11; v. 6:972-74, 979; v. 7:1078; v. 8:1480-81; v. 15:193; v. 30:4082-83, 4087; v. 41:6243). According to Mr. Matheson, a discovery of a valuable mineral deposit was made no later than Contestees' receipt of the assay results from Union Miniere in early 1991 (Tr. v. 27:3591-95, 3619).

In 1991 Mr. Matheson met Dr. Ager (Tr. v. 20:3477, 3574). Beginning in 1992, mining-related activity decreased on the Mijo claims because Contestees lacked funding and because Mr. Matheson re-directed his efforts towards obtaining financing and permits and working with Dr. Ager to understand "where the gold lives in the ore," *i.e.*, the mineralogical components and structure of the material from the Eldorado Valley and how to assay and recover the precious metals purportedly in that material (*see, e.g.*, Tr. v. 14:22-23; Tr. v. 31:4393-4401; v. 33:4670-71).

One of their conclusions was that the material from the Mijo claims is very similar to that from the southern Eldorado Valley claims owned by Dr. Ager in terms of mineralogical characteristics and responsiveness to metallurgical processes (*see, e.g.*, Tr. v. 17:3004, 3013-14; v. 18:3132-33, 3208). The southern Eldorado Valley claims, collectively referred to as the Eldorado project and totaling 30,000 acres, were acquired between 1991 and 1993 by Dr. Ager and/or companies in which he or his immediate family had a financial interest (*see, e.g.*, Ex. 21, p. 11; Ex. 86, pp. 4, 6; Ex. 89; Tr. v. 19:3459-60; v. 20:3476, 3513-21, 3528-29, 3531-34).

By 1996 Mr. Matheson had not yet secured adequate financing for development of the Mijo claims (Tr. v. 14:18). Several big mining companies had taken and assayed samples from the Mijo claims but the results were unsatisfactory because they could not reproduce the gold values which Contestees were reporting (Tr. v. 14:49-50; v. 23:2874, 2876). The many problems associated with assaying the Mijo material hindered Mr. Matheson's efforts to attract the interest of the big mining companies to participate in development of the claims (*see, e.g.*, Tr. v. 14:49-50; v. 23:2874, 2876, 2879-81).

With the opening of a freeway near the Mijo claims in 1996, Mr. Matheson focused his financing efforts on contracting with sand and gravel operations to remove from the Mijo claims material for their own use and material for Contestees to process for precious metals (*see, e.g.*, Tr. v. 2:487-94; v. 14:18, 62). In this way he could obtain material for processing without incurring any capital or operating extraction costs, as the sand and gravel operator would extract the material using its own equipment; and he would also receive payment from the operator for the material which it removed (*see id.*; Tr. v. 23:2922-25).

The first such contracting occurred on January 7, 1997, when Mr. Matheson executed on behalf of Pass Minerals two contracts, one with Industrial Construction, Inc., and one with its parent company, Bonanza Material, Inc., (hereinafter collectively referred to as "Bonanza"), now known as Hanson Aggregates Las Vegas, Inc. (Tr. v. 2:487-94; v. 23:2772-73, 2804-08; Ex. A-86; Exs. 28, 29). Bonanza is a ready-mix company (Tr. v. 23:2843; v. 41:6284). Those contracts provided for removal of 3,200,000 tons of material from the Mijo claims and required Bonanza to prepay a royalty of \$75,000 per year for the removed material and to submit a reclamation bond to BLM (Ex. A-86; Tr. v. 2:490; v. 23:2812, 2819-21; v. 25:3183-84).

The bond requirement was included to comply with a condition of Pass Minerals' plan of operations for the Mijo 16 claim, which required submission of a reclamation bond (Ex. A-86). The plan had been approved by BLM on May 24, 1996 (Ex. A-86; Tr. v. 14:23).

Prior to executing the contracts, Bonanza had conducted core drilling on the Mijo claims in September 1996 (Tr. v. 23:2769-73, 2804). Four holes were drilled to a depth of 50 feet at sites selected by Bonanza and then the samples were split between Bonanza and Mr. Matheson (Tr. v. 23:2774-78, 2833-34; v. 41:6268).

Another component of Mr. Matheson's plan to finance development of the Mijo claims was to enlist the services of Mr. Gunnison to hopefully recover sizeable amounts of gold using his leach process in what would amount to a pilot plant operation (Tr. v. 1:213-14; v. 23:2874; v. 27:3548-49). Mr. Matheson chose to work with Mr. Gunnison because (1) he had leached thousands of samples of Eldorado Valley material, including Mijo material, and reported substantial gold values, (2) he knew the costs of leaching the material, (3) he was recommended by Dr. Ager, (4) Mr. Gunnison's company, Energy International, Inc. (EII), was willing to finance construction of a custom mill to process the Mijo material, with an equipment arrangement similar to that used by Mr. Gunnison at the Becki M millsite to leach the samples, and (5) EII's custom mill would be an enlargement of its then existing lab in Phoenix, which was relatively close to the Mijo claims (Tr. v. 15:180-81; v. 22:2676; v. 23:2913; v. 31:4329-31).

By February of 1998 Mr. Matheson was sending samples to Mr. Gunnison at EII for assaying (Tr. v. 22:2671-73; Ex. A-129, pp. 10 thru 11-1). For a magnetically concentrated sample taken in February at a site known as the John No. 2 Hole, which Mr. Gunnison split and assayed four times, he reported gold values in ounces per ton of 23.25, 22.72, 22.57, and 22.88 (Ex. A-129, p.10, 10-1, 10-2; Tr. v. 8:1399-1403; v. 22:2671-73; v. 27:3713-21; v. 30:4683-84).

By a Memorandum of Agreement dated June 18, 1998, Mr. Matheson and Pilot Plant agreed to allow EII to use their belt filter for the exclusive purpose of processing precious metal concentrates from Pilot Plant, Pass Minerals, and Kiminco and EII agreed to process the concentrates at the going market rate (Ex. A-86, p. 9-1). According to Mr. Matheson, EII was willing to and did expend \$600,000 to enlarge its Phoenix facility into a pilot custom mill to handle the anticipated influx of material from the Mijo claims based upon high gold values in the Mijo material assayed by Mr. Gunnison (see, e.g., Tr. v. 22:2676; v. 25:3300-01). Through the arrangements with EII and Bonanza Construction, Mr. Matheson sought to produce a sizeable

amount of gold, with minimal investment by Contestees, to attract one or more big mining companies to become a joint venturer in developing the Paiute Valley and Mijo claims (Tr. v. 23:2859-2875).

Sometime after reaching agreement with Bonanza but prior to contracting with Mr. Gunnison (most likely January 1998), Mr. Matheson requested by letter that BLM jointly sample the Mijo claims with Contestees and supervise the assaying of the head ore, concentrates, and tails to prove that a discovery had been made and avoid a future shutdown of the contemplated operations by Bonanza based upon lack of discovery (Tr. v. 7:1215-18; v. 41:6231-32; Ex. A-37). Mr. Matheson testified that Joel Mur, a BLM natural resource specialist, informed Mr. Matheson that BLM was not going to respond to the request (Tr. v. 41:6232).

In May or June of 1998, Charles Moore began working for Contestees (Tr. v. 8:1341, 1343). Mr. Moore has been mapping subsurface structures in the mining industry using the "Moore Radiometer" since 1979 (Tr. v. 7:1112-13, 1117, 1127; v. 8:1323-32, 1364). He took over 200 samples from the Mijo claims and sent many to Mr. Gunnison for assaying (Tr. v. 7:1119-20; v. 8:1341-42, 1349-50, 1355, 1395-97, 1422).

To comply with the plan of operations bond requirement, Mr. Matheson filed with BLM on June 24, 1998, a copy of a surety agreement naming Bonanza as the principal and the State of Nevada, Department of Conservation and Natural Resources, Division of Environmental Protection (NDEP), as the obligee (Ex. A-86). The surety agreement was deficient because a copy, rather than the original, had been filed, because the agreement failed to name BLM as the obligee, and because no rider was executed stating that the agreement was for the benefit of Contestee Pass Minerals, the operator under the plan of operations (Ex. A-86). Pass Minerals, Inc., 151 IBLA 78, 86 (1999).

By July of 1998 Bonanza was constructing an access road through the Becki M mill site to the Mijo 16 claim (see, e.g., Ex. 89, p. 11; Tr. v. 14:84, 92-95). For ease of stockpiling material, turning trucks around, and accessing by road, Bonanza eventually chose a large flat expanse in the northeast corner of the Mijo 16 claim as its pit area (Tr. v. 8:1427-28). Mr. Phebus testified that he would have located the pit in another location where he knew the gold values were good (Tr. v. 4:830-31).

By August of 1998 Bonanza was removing material from the pit (Tr. v. 33:4809; Ex. A-129, p. 13). The material was utilized as follows: Bonanza took what material it needed for its road base product, the remaining material was run through a magnetic separator to obtain a magnetic concentrate for Contestees, and the nonmagnetic portion of the remainder was used by Bonanza for its road base (Tr. v. 4:831-32, 835; v. 7:1059-60, 1213-14).

The road base and nonmagnetics taken by Bonanza carried gold values, according to Mr. Phebus (Tr. v. 832, 835-36), and constituted 97 to 98 % of the excavated material, according to Mr. Matheson (Tr. v. 23:2819, 2823). Responsive to the huge appropriation by Bonanza of material allegedly containing gold values, Mr. Matheson testified that Contestees focused on

producing and refining the magnetic concentrate because the material is so inexpensive to concentrate into a much higher valued product (see, e.g., Tr. v. 31:4350-51). From the foregoing facts, it is clear that Bonanza was conducting a sand and gravel operation at its own direction, with Contestees being able to obtain a magnetic concentrate as a byproduct thereof.

After Mr. Gunnison indicated that some of the assay values were too low for him to profitably process, particularly for samples from Bonanza's pit area, Mr. Moore, through sampling and use of the "Moore Radiometer", identified two parallel, linear zones of purported mineralization on the Mijo 16 claim, which were often referred to as the "blue structures" during the hearing (Exs. HH, A-50; Tr. v. 7:1119-23, v. 8:1325, 1340-43, 1395-97, 1404-05, 1414-14, 1429). According to Mr. Moore, the blue structures are 1,800 feet deep structures/faults which have acted as riffles entrapping metals likely transported to the area via three hypothermal cross-channels emanating from a hypothermal deposit to the north (Tr. v. 7:1118-21; v. 8:1323, 1325-31, 1343, 1347, 1388-89, 1393-94, 1422). Messrs. Moore, Phebus, and Matheson attributed most of the variation in the assay results for the Mijo samples to their location relative to the blue structures, with higher values generally being derived from within the "blue structures" (Tr. v. 3:888-90, 901; v. 7:1133-35; v. 8:1341-42, 1404-06; v. 23:2906-07; v. 30:4021-22; v. 32:4558-59, 4562-64; Ex. A-51).

Mr. Matheson elaborated that the assay results varied substantially only for the samples of magnetic concentrate, whereas the head ore samples nearly always assayed for gold (Tr. v. 30:4211-12; v. 32:4558-59). He offered no scientific explanation for this observation nor details as to the implied consistency of the head ore values.

Mr. Matheson concluded that the head ore is best assayed by first applying a thiourea leach but that the Belgian Process works best on the magnetic concentrate (Tr. v. 31:4343, v. 33:4718). More generally, several of Contestees' witnesses testified that a leach is superior to any fire assay method for extracting gold from the Eldorado Valley material, including the Mijo material (Tr. v. 5:192-93, 283; v. 14:54; v. 16:2932; v. 17:3049, 3062-63; v. 29:3873; v. 31:4338), and that Mr. Gunnison's proprietary thiourea leach produced the best results (see, e.g., Tr. v. 5:192-93, 283; v. 33:4775).

According to Contestees witnesses, several different people, including Dr. Ager and Merwin (Murray) White, d.b.a. White Technology, have assayed Eldorado Valley material after processing it with a thiourea leach and reported gold values (see, e.g., Tr. v. 6:951-54; v. 7:1051; v. 8:1462-64; v. 27:3594-95; v. 33:4748-49, 4762-63, 4767-68, 4777). The thiourea leach processes of Dr. Ager and Mr. White are alleged to be proprietary, but Mr. White eventually disclosed his process to the mineral examiners (Ex. 44).

In December of 1998, at Mr. Matheson's request, Bonanza dug 12 to 16 pits from which Mr. Matheson intended to take samples for testing (Tr. v. 14:74-77; v. 23:2835-36, 2842-43; v. 32:4430-31; Ex. A-112). Both Messrs. Matheson and Phebus testified that the cacti from those pit areas were removed and planted at the Becki M mill site, with the intent to replant them once the pit areas were refilled (Tr. v. 4:873-74; v. 22:2575; v. 21:2483-84; v. 31:4306-07). Mr. Matheson selected the pit sites at random to blanket the south part of the Mijo 16 claim, but

Contestant proved at hearing that approximately half of the pits were dug outside the Mijo claims to the east (Tr. v. 23:2835-36; v. 32:4425, 4468; v. 40:6011-13).

On January 11, 1999, BLM issued a mineral trespass notice to Pass Minerals and Bonanza alleging that they were removing sand and gravel from the Mijo 16 claim under the plan of operations, which provides for the mining of gold not sand and gravel. BLM asserted that the removed material was being sold for use as sand and gravel without authorization. This assertion was based upon observations that the removed material was being separated for use as road base before any processing for recovery of precious metals. (Tr. v. 7:1213-14; Ex. A-63, p. 5)

In the process of completing the mineral trespass analysis, BLM personnel determined that a validity examination of the Mijo claims should be conducted to determine whether there are precious metals present (Tr. v. 38:5739). That examination was conducted by two BLM certified mineral examiners, Matthew W. Shumaker and Burrett W. Clay (Ex. 2). The mineral examination culminated in the production of a Mineral Report (Ex. 2) and Recommendations and Conclusions (Ex. 3).

Mr. Shumaker is a registered and certified professional geologist who has been teaching geology and related courses for BLM since 1985 and is BLM's National Training Center's Senior Technical Specialist for Geology (Ex. 6). Mr. Clay has been a mineral examiner since 1977, was the primary author of the BLM manual section (3891) on validity examination procedures, is a senior instructor for BLM on validity examination procedures and related subjects, and is currently the Chairman of BLM's National Mineral Examiners Certification Panel, a position which he assumed by selection of his peers (Ex. 1; Tr. v. 36:5296-97).

Messrs. Shumaker and Clay sampled the claims on March 9, 1999, April 14, 1999, and May 13, 1999 (Ex. 2, p. 20). On March 29, 1999, and in February or March of 2000, they also toured EII's pilot plant in Phoenix where Contestees anticipated refining 2 tons of Mijo material per hour (Ex. 2, p. 8; Tr. v. 1:214; v. 21:2459).

Mr. Matheson or his representatives (including Charles Moore) observed the samplings and were asked where to sample (Ex. 2, p. 20; Tr. v. 1:28; v. 8:1426-27; 40:5977-79). Mr. Matheson did not remember being asked and testified that he told the mineral examiners that the deposit was homogeneous so that he did not care where they took samples (Tr. v. 32:4561-62; v. 33: 4808). Mr. Clay remembered more clearly that Mr. Matheson or a representative indicated areas to sample by reference to a map they brought and by gestures (Tr. v. 1:28; v. 40:5977-79).

Fourteen samples were taken, ranging in size from 0.025 to 0.67 cubic yards (Ex. 2, p. 1). Sample splits and blanks and standards were sent to four reputable assayers, Legend, Inc., Chemex Labs, Inc., Bondar-Clegg, and the Nevada Bureau of Mines and Geology (NBMG) as well as three assayers of Mr. Matheson's preference: Mr. White at White Technology, Jerry Henderson, d.b.a. Complex Metals Research and Development, Inc., and Dr. Donald Jordan, the

proprietor of Metallurgical Research and Assay Laboratory (MRAL) (Ex. 2, p. ii; Tr. v. 1:32-41, 171, 174-75, 200-03). The blanks included at least one sample from the yard of the central Arizona home of either Mr. Shumaker or Mr. Clay which was marked as a sample from the Mijo claims (id.).

Mr. Matheson's preferred assayers reported high values for the samples, including the blanks labeled as Mijo samples (Ex. 2, p. ii). Mr. White reported troy ounces of gold per ton ranging from 0.028 to 0.200 for samples marked as Mijo samples, with three of the four highest values for the blanks (Ex. 2, p. 29). Mr. Henderson reported results ranging from 0.02 to 0.16 troy ounces of gold per ton for samples marked as Mijo samples, including results of 0.06 and 0.05 for the blanks (Ex. 2, p. 33). Dr. Jordan likewise reported substantial gold values for the blanks marked as Mijo samples (Ex. 2, p. 37). Also, their results were inconsistent, varied greatly, and did not come close to the known values for the standards (Tr. v. 1:39-40; Ex. 2, p. ii). Consequently, the mineral examiners concluded that they were unreliable and disregarded them for purposes of their economic analysis (Ex. 2, p. ii).

The reputable assayers accurately analyzed the blanks and standards and generally found, using several different assay techniques, that the level of precious metals in the Mijo samples did not exceed the lower detection limit of the technique used, with the highest gold value being only \$0.13 oz./ton at a gold price of \$286/oz. (Tr. v. 1:41, 208-09; Ex. 2, pp. ii, 45). This highest value was greatly exceeded by Contestees' own cost estimate of \$1.00 to mine, screen, and magnetically separate one ton of material (id.) and therefore the mineral examiners concluded that Contestees had failed to make a discovery of a valuable mineral deposit (Tr. v. 1:44, 48, 208-09; Ex. 3).

The mineral examiners also noted that EII's pilot plant looked brand new, with little signs of usage. The material processing system included grinding in a ball mill, pumping with water through a sizing device, pumping through PVC pipes into a series of plastic cascading agitation tanks for treatment with a thiourea leach, and then pumping through more PVC pipe onto a belt dryer/filter for separation of the solids from the liquids. This processing system is somewhat similar to one used at times by Mr. Phebus at the Becki M mill site, which Mr. Matheson characterized as the "Model T" version. (Ex. 2, p. 8; Exs. 73, A-115, A-144; Tr. v. 1:126-27; v. 3:788; v. 4:850-53; v. 15:181)

The mineral examiners identified problems with the EII plant, including the mounting of pumps and other items on wood likely to deteriorate as it becomes wet. The PVC piping also lacked durability for handling slurries. More significantly, they noted the absence of an air quality permit or on-site provision for tailings or waste disposal. They were told that the tailings or waste would be dumped at a local landfill. They concluded that the plant could not produce commercial quantities of precious metals, noting that the belt filter would plug up if the contemplated grind of 400 mesh were used. (Ex. 2, p. 8; Exs. 73, A-144; Tr. v. 1:126-27, 179-80, 211, 214-21; v. 2:364).

Subsequent to completion of the Mineral Report, samples from the Mijo claims were

assayed, at BLM's request, by Dr. Paul Lechler of the NBMG, Dr. Ralph Pray, Chemex, and the Center for Advanced Mineral and Metallurgical Processing (CAMP) (see, e.g., Exs. 4, 5, 39, 43, 45, 67; Tr. v. 1:39-40; Tr. v. 37:5494-95, 5506-08; v. 38:5734-36, 5840-42, 5901-09; 40:5967-71). Using several different assay techniques, they found either no gold or trace amounts of gold (id.).

On January 19 and 21, 1999, Contestees shipped two truckloads totaling fifty tons of material - which was extracted from the Mijo claims by Bonanza and concentrated by magnetic separation - to Mr. Gunnison at EII's custom mill in Phoenix for recovery and refining (Tr. v. 23:2823, 2906; Ex. 2, p. 7; Ex. A-86, p. 9-4). Mr. Gunnison had requested the two truckloads to "break in" the newly upgraded pilot mill (Tr. v. 23:2906-10).

Shortly after issuance of the mineral trespass notice, Messrs. Matheson and Mur discussed entering into an escrow agreement (Tr. v. 7:1172, 1227). Draft agreements were produced, including one which BLM sent to Mr. Matheson on February 25, 1999 and which required Pass Minerals to pay into escrow \$0.65 per ton of material removed for sale as common mineral material, pending resolution of the trespass investigation and any appeals relating thereto (Tr. v. 7:1230-42; Exs. 40, 49; Ex. A-63, pp. 10-13).

However, BLM ultimately refused to enter into an escrow agreement (Tr. v. 7:1230-42; v. 10:1704, 1717-18, 1812-14; Ex. 49). Mr. Matheson later challenged BLM's refusal before the Interior Board of Land Appeals (IBLA) and the IBLA upheld BLM's refusal (see, e.g., Tr. v. 30:4211-12).

Bonanza did not operate on the claims after receipt of the mineral trespass notice and its relationship with Contestees terminated in the spring of 1999 for several reasons, including that a representative of Bonanza lied to Mr. Matheson and that Bonanza had bought land next to the Mijo claims to use as a quarry (Ex. A-86; Tr. v. 2:492; v. 7:1213-14; v. 14:36-37, 62; v. 21:2810-12, v. 23:2808-19, 2826-29, 2838-41; v. 38:5739). Mr. Matheson then arranged for another sand and gravel operation, ARC Minerals, Inc., d.b.a. CRS, to drill three holes on the Mijo claims on February 22, 1999,² with CRS choosing the locations and the depth of 100 feet (Ex. A-129, pp. 22 thru 23-12; Tr. v. 14:90, 92; v. 21:2454; v. 23:2841, 2845-49; v. 28:3759; Ex. A-86, p. 3-8).

On April 28, 1999, Mr. Matheson executed an agreement on behalf of Pass Minerals with CRS in which CRS agreed to remove 400,000 tons of material annually for both parties' benefit, pay into an escrow account \$0.65 per ton of removed material, and pay Pass Minerals an annual royalty of \$100,000 (Tr. v. 2:490, 492; v. 14:61, 64; Ex. 27). CRS never removed any material because of the risk that removal would constitute a trespass and BLM's refusal to agree to an

²Mr. Matheson identified two different times for the drilling: February 22, 1999 and April 1999 (compare Tr. v. 21:2454 with Tr. v. 14:90, 92; v. 23:2841), but the great weight of evidence shows that the correct date is February 22, 1999.

escrow arrangement (Tr. v. 23:2915-16, 2919).

Earlier in April (April 5), the Field Office Manager, Las Vegas Field Office, BLM, had issued a decision suspending Pass Mineral's plan of operations for two reasons: (1) Pass Minerals had failed to post and maintain a reclamation bond, and (2) a validity examination of the Mijo claims was ongoing (Ex. A-63, p. 14; Tr. v. 39:5745). At that time, EII had not yet processed the two truckloads of concentrate delivered in January because, according to Mr. Matheson, the new plant was not yet operational due to the absence of eye wash stations (Tr. v. 23:2911-12).

Contestees never sent additional material to EII because EII never processed the two truckloads nor requested additional material (Tr. v. 23:2906-10). Mr. Matheson testified that EII did not process the material because it did not want to train 14 or 15 of the 20 people necessary to operate the plant until the suspension of Pass Minerals' plan of operations was lifted so that a supply of material was available to keep the plant running (Tr. v. 21:2459; v. 22:2634).

In June of 1999, Gene Strickland, who apparently was the majority owner of EII, notified Mr. Matheson that EII would cease operation as a going concern effective June 30, 1999, because it could no longer anticipate a steady supply of concentrate from Pass Minerals (Ex. A-86, pp. 9-5, 9-6; Tr. v. 23:2891-93, 2896-97). On September 1, 1999, Mr. Strickland leased EII's Phoenix plant to Joe Fahey (Tr. v. 14:24; v. 23:2896-97; Ex. A-86).

By decision dated July 30, 1999, the Nevada State Director, BLM, upheld the Field Office Manager's decision suspending Pass Minerals' plan of operations (Ex. A-86). By decision dated November 3, 1999, the IBLA set aside the State Director's decision, holding, among other things, that Pass Minerals cured the bonding deficiencies prior to the issuance of the State Director's decision. Pass Minerals, Inc., 151 IBLA at 86.

Sometime prior to issuance of the IBLA's decision, BLM returned any bonds which had been filed to the bond issuer (Tr. 23:2830). Consequently, after issuance of the IBLA's decision, BLM informed Mr. Matheson that a bond would have to be properly filed before the plan of operations would be considered approved so that Pass Minerals could proceed to mine under the plan (Ex. 48; Ex. A-63, p. 21; Tr. v. 10:1797-99; v. 5745-46).

By letter dated July 28, 2000, BLM informed Mr. Matheson that Pass Minerals plan was considered approved and that it was free to resume mining thereunder (Ex. 48; Tr. v. 10:1797-99; v. 5745-46). Mr. Matheson testified as to various attempts he then made to interest mining companies and refineries in development of the Paiute Valley claims and/or Mijo claims (see, e.g., Tr. v. 23:2860-70). However, Pass Minerals was unable to resume mining on the Mijo claims because Contestees could not raise the approximate sum of \$4 million necessary to acquire new extraction and concentrating equipment nor attract a joint venture partner or another sand and gravel operator to supply the equipment, and because Mr. Matheson was not interested in starting a public company or purchasing or renting used equipment (Tr. v. 23:2915, 2919-26).

According to Mr. Matheson, they could not attract a sand and gravel operator because BLM had taken the position that any sand and gravel removal operation constituted a trespass and BLM would not agree to allow removal with payments into escrow for the removed material (Tr. v. 23:2915-16, 2919). In September of 1999, while trying unsuccessfully to convince BLM to accept an escrow arrangement, Mr. Matheson did succeed in obtaining Mr. Strickland's verbal agreement to make available EII's Phoenix plant to recover any precious metals from the Mijo material, subject to certain conditions, including that Mr. Matheson put extraction and concentrating equipment on the Mijo claims (Tr. v. 23:2898-2905; v. 24:3133-35; Ex. 24). According to Mr. Matheson, that agreement was never carried out because BLM would not agree to the escrow arrangement and because Mr. Strickland died on October 3, 2000 (Tr. v. 14:30; v. 21:2461-63; v. 23:2903-04).

Mr. Matheson testified that he is now trying to raise \$120,000 to build with Mr. Gunnison a small facility capable of refining 20 tons per hour (Tr. v. 21:2473, 2875; v. 25:3302-09). He has also contacted various mining companies and refineries, but there are currently no agreements nor negotiations underway with any company to assist in development of the Mijo claims (see, e.g., Tr. v. 23:2856-65, 2879, 2890).

During 2001 the mineral examiners sent samples to Dr. W. T. Yen of Queens University, Dr. Jordan of MRAL, Claire Rogers, proprietor of Rogers Research, and Roger Smid, all of whom are assayers used by Contestees or Mr. Vincent (Tr. v. 39: 5804-19; Exs. 54 thru 57). The samples included blanks from Mr. Shumaker's front yard and various standards, all of which were either identified as samples from the Eldorado Valley or left unidentified (Tr. v. 39:5804-19). Mr. Shumaker convincingly testified that each of the assayer's reported results are incompetent (id.).

DISCUSSION

I.

Contestant Established A Prima Facie Case

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, 101 I.D. 123, 141 (1994). A prima facie case means that the case is completely adequate to support the Government's contest and that no further proof is needed to nullify the claim. Id. It is axiomatic that the determination of whether or not the Government has presented a prima facie case is necessarily limited to the evidence presented by the Government in its case-in-chief. Id. Once a prima facie case is presented, the burden shifts to the claimant to overcome this 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. Multiple Use, Inc., 120 IBLA 63, 110 (1991); United States v. Miller, 138 IBLA 246, 268-70 (1997).

In this case the Government contests the validity of the Mijo claims based, among other things, upon the allegation that each lacks a discovery of a valuable mineral deposit. In order to be valid, a mining claim must contain, within its boundaries, a "valuable mineral deposit." United States v. Collord, 128 IBLA 266, 268 (1994), aff'd in relevant part, rev'd in part, Civ. No. 94-0432-S-EJL (D. Idaho Sept. 28, 1994), aff'd, 154 F.3d 933 (9th Cir. 1998) (citing 30 U.S.C. § 22; Best v. Humboldt Placer Mining Co., 371 U.S. 334, 335 (1963)).

The standard utilized to determine whether a discovery of a valuable mineral deposit has been made is the "prudent man" test. United States v. Coleman, 390 U.S. 599 (1968). Accordingly, there must be found within the limit of the contested mining claim mineral of such quality and quantity as to justify a person of ordinary prudence in the further expenditure of his labor and means with a reasonable prospect of success in developing a paying mine. Converse v. Udall, 399 F.2d 616 (9th Cir. 1968), cert. denied, 393 U.S. 1025 (1969); United States v. Lederer, 144 IBLA 1, 9 (1998).

One means for determining whether there will be a "paying mine" is to apply the "marketability test." Multiple Use, Inc., 120 IBLA at 80. Application of this test presupposes the established existence of a mineral deposit, United States v. White, 118 IBLA 266, 312 (1991), and requires a showing that the evidence is of such a character that there is a reasonable prospect that the commercial value of the deposit will exceed the cost of extracting, processing, transporting, and marketing the contained mineral. Multiple Use, Inc., 120 IBLA at 80. In other words, to have a reasonable prospect of success in developing a paying mine, the mine owner must be able to demonstrate, as a present fact, considering historic price and cost factors and assuming they will continue, that there is a reasonable probability that the mineral can be extracted and marketed at a profit. Id. at 80 n.16.

A prima facie case is made when 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, 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 and on the proper standard for determining whether a discovery has been shown to exist. United States v. Hooker 48 IBLA 22, 28 (1980). The Government mineral examiners determined that no discovery of a valuable mineral deposit existed on either of the claims based upon the reliable assay results showing platinum group metals in concentrations no greater than the average crustal abundance and the highest gold value to be \$0.13 per ton of extracted material at a gold price of \$286 per troy ounce (Ex. 2, pp. ii, 45).

They opined that "the gold price would have to significantly exceed the historic high of nearly \$900 per troy ounce by an order of magnitude just to begin to pay the current dollar costs for this operation." (Ex. 2, p. 45). Using Contestees own cost estimate of \$1.00 per ton for mining, screening, and magnetic separation and the highest gold value of \$0.13 per ton, the mineral examiners noted that a net loss of \$0.87 per ton would result. The loss would actually be greater because the cost estimate excludes costs for disposal of oversize material, crushing and grinding, transportation, environmental mitigation, reclamation, and refining and because the

calculation assumes 100% gold recovery, no impurities in the gold, and no mill loss (Ex. 2, p. 45).

Their determination is well-supported by the Mineral Report (Ex. 2) and their testimony (Tr. v. 1, 2). This evidence from Government examiners, who have had sufficient training and experience to qualify as an expert witnesses, establishes a prima facie case. See United States v. Gillette, 104 IBLA 269, 274-75 (1988).

In their posthearing briefs, Contestees do not argue that the Government failed to establish a prima facie case. They do challenge the honesty, integrity, thoroughness, and expertise of the Government examiners and some of the actions taken by the Government subsequent to location of the Mijo claims, but those challenges do not show that the Government failed to establish a prima facie case. To the extent they may be material, the challenges are discussed below.

II.

Contestees Failed To Prove The Existence of A Discovery By A Preponderance Of The Evidence

Because Contestant established a prima facie case of no discovery, the burden shifted to the Contestees to prove the existence of a discovery by a preponderance of the evidence. Multiple Use, Inc., 120 IBLA at 110; Miller, 138 IBLA at 268-70. Contestees adduced much evidence at hearing as to their efforts to allegedly develop the claims and achieve production readiness up to the point when Pass Minerals' plan of operations was suspended, asserting that such efforts were those that a reasonably prudent person would have taken.

They argue that the "prudent man" test has been satisfied, citing to United States v. Flurry, A-30887 (Mar. 5, 1968) for the proposition that "the most persuasive evidence as to what a man of ordinary prudence would do with a particular mining claim is what men have, in fact, done or are doing * * *." Id. at 7. However, the question to be answered in determining whether a mining claimant has made a discovery of a valuable mineral deposit is not whether the claimant took actions that a reasonably prudent person would have taken but, rather, whether the claimant has found within the limits of the contested mining claim mineral of such quality and quantity as to justify a person of ordinary prudence in the further expenditure of his labor and means with a reasonable prospect of success in developing a paying mine.

The quoted language of the Flurry decision must be read in context. The quoted statement was a prelude to the finding that "[t]here is no evidence in the record that men, prudent or otherwise, have exhibited any inclination to devote their labor or their means to the development of a mine * * *." Id. at 8. In that case evidence of lack of development of the contested claims for nearly 33 years, as well as other evidence, led the deciding official to conclude that no discovery had been made. Id. at 7-8.

It does not follow that evidence of development of a claim by the mining claimant establishes the existence of a discovery. “[T]he prudent man standard is an objective standard. * * * The prudent man rule requires the claimant to submit proof that a prudent man would develop a mine. It is not enough that a claimant himself desires to do so if the evidence leads to the conclusion that a prudent man would not.” United States v. Foresyth, 100 IBLA 185, 209-10, 94 I.D. 453, 467 (1987).

Even where there is evidence that a claimant was actually mining a claim at a small profit, a finding of no discovery was made because “a prudent man would not develop a mine which promised a profit below the return for a commercial venture.” United States v. Kottinger, 14 IBLA 10, 16 (1973). Contestees evidence of development of the claims does not show that they were mining the claims at a profit nor, more importantly, that there is a reasonable prospect of success in developing a profitable mine.

With regard to the critical issue of whether such a prospect exists, Contestees claim that they have discovered a very rich deposit of gold, silver, and platinum group metals, but that special and often proprietary assay methods are necessary to detect it. They contend that this is a new type of deposit previously unknown to the mining industry and can be mined at very low cost.

In contrast, Contestant’s investigation shows the area to be a typical Basin and Range valley filled with indistinct alluvium. Using largely conventional assay techniques, Contestant generally has not detected precious metals above the average crustal abundance.

At first glance, this gross disparity between the parties’ positions is perplexing. However, after consideration of the witnesses’ credibility, the reputations, qualifications, and reliability of the assayers, and the quality of the data and analyses, I must conclude that Contestant’s position is correct and that Contestees have not met their burden of proving that a discovery of a valuable mineral deposit had been made.

In general, Contestant’s witnesses were more credible than those of Contestees. Furthermore, the assayers and data and analyses upon which Contestant’s witnesses relied are also more reliable and credible than those upon which Contestees’ witnesses relied.

Contestant applied a number of well-established conventional analytical methods, ranging from fire assay, leach extraction, instrumental analyses, and electron microscopy, to samples from the claims and found no anomalous precious metal values using any of them. The chain of custody for all the samples analyzed by Contestant’s experts was established. Contestant’s experts explained that the methodologies used are reliable, regardless of the structure and composition of the analyzed material and specifically with respect to the Mijo material.

Contestees, on the other hand, typically relied upon unusual analytical methods, often claimed to be proprietary, that produced widely scattered results, frequently with extraordinarily

high values. The reliability and representativeness of their data was further undermined by poor record keeping of sampling and assay details. To the extent Contestees' witnesses explained their theories why the conventional analytical methodologies would not work, those theories generally were not supported with adequate data and were refuted by Contestant's experts.

As discussed below, Contestees failed to meet their burden of proof in at least two respects: First, the weight of the evidence establishes that the Mijo claims do not contain valuable minerals. Second, assuming, arguendo, that valuable minerals exist, Contestees failed to show the extent of the deposit or reserves.

A.

Factors Adversely Affecting The Credibility of Witnesses Significant To Contestees' Case

Contestees called the following witnesses: Ernest Gene Phebus, Clyde Smith, Jerry Henderson, William Guay, Charles Moore, Joel Mur, Merwin White, Mark Chatterton, Roger Haskins, Charles Morris, Charles Ager, K. Ian Matheson, Thomas Leshendok, Burrett Clay, and Matt Shumaker. Messrs. Mur, Chatterton, Haskins, Leshendok, Clay, and Shumaker are all BLM employees. Except for the BLM witnesses and possibly a few others, Contestees' witnesses' credibility is poor or questionable because of one or more factors, including demonstrated deceptiveness before and/or during their testimony, displays of incompetent performance of mining-related functions, poor reputations, convictions for crimes involving dishonesty, limited expertise, inconsistent statements, and/or farfetched assertions.

Ernest Gene Phebus

Mr. Phebus was the primary witness upon which Contestees relied to demonstrate a discovery before the date the lands were segregated from operation of the mining laws. Mr. Phebus' testimony is not entitled to substantial weight because of his dishonesty under oath and his questionable expertise in assaying and metallurgy.

BLM Special Agent Randolph August testified that Mr. Phebus was convicted of burglary in 1955, for which he served time in the Illinois State Penitentiary, and of theft of interstate shipments in 1976, for which he was given a five-year suspended sentence (Tr. v. 40:6145). Contrary to the truth, Mr. Phebus repeatedly denied the existence of those prior criminal convictions (see, e.g., Tr. v. 7:1067-68; Tr. v. 8:1320-21).

Mr. Phebus also falsely and repeatedly testified regarding the existence of the three 200-foot by 800-foot pits which allegedly were used as major sampling areas on the Mijo claims (Tr. v. 29:3928, 3946, 3952-56; v. 38:5602-04, 5625-28; Exs. HH, A-129, A-183). According to him, those pits were created in the fall of 1990 and filled in during 1993 (Tr. v. 22:2570; v. 29:3952-56; v. 41:6227, 6244). However, a review of aerial photos taken in April 1990, June

1994, and September 1999 shows that these pits never existed (Tr. v. 40:6004-08, 6036-37).³

Mr. Phebus originally identified the location of the pits on page 1 of Exhibit A-129, but later provided corrected locations on a map labeled Exhibit A-183 (Tr. v. 38:5601-05). That map depicts a north-south bladed road within the Mijo claims close to their eastern border which has existed since before 1990, according to him (Tr. v. 38:601-05, 625-27). In actuality, there is a north-south stream drainage without manmade alterations in the purported location of the road and the only road fitting Mr. Phebus' description lies 300 feet east of the Mijo claims (Tr. v. 40:6002-03).

Another example of a false statement made by Mr. Phebus is his testimony that he lived at the Becki-M mill site since July 1990, except for periodic stays at his home in Pahrump, Nevada (Tr. v. 3:734; v. 6:1008-09; v. 7:1094-95). In contrast, in 1992 he told Agent August that he lived in California for six months of the year and provided Agent August with a California driver's license showing a Daly City address (which is near San Francisco) (Tr. v. 40:6145-46).

Mr. Phebus testified that he is not an assayer, chemist, or engineer but, rather, specializes in designing and building milling and processing equipment (Tr. v. 4:853-54; v. 7:1060-66). He did not attend college (Tr. v. 7:1064) and evidenced a less than thorough understanding of metallurgical principles.

Dr. Corby Anderson, who is an expert in metallurgical engineering, heard Mr. Phebus' testimony regarding numerous pieces of equipment that Mr. Phebus alleged he had constructed (Tr. v. 38:5666). Based on Mr. Phebus' explanation of the equipment he built, Dr. Anderson concluded that Mr. Phebus does not "have any competency at all" in designing milling and processing equipment and failed to display "any understanding of fundamental metallurgical principles" (Tr. v. 38:5688-89). Dr. Anderson then explained the basis of his conclusions, using several pieces of equipment Mr. Phebus designed as examples (Tr. v. 38:5688-91). This evidence casts further doubt upon the credibility of Mr. Phebus' testimony, especially those portions regarding the reliability of the processes for assaying and recovering precious metals from the Mijo claims.

³The testimony and conclusion that the pits never existed is based, in part, upon the fact that the status of the vegetation did not reflect any disturbance. In an apparent attempt to suggest that the pits were not noticeable because they had been revegetated, Mr. Matheson testified that Mr. Phebus told him they had been revegetated (Tr. v. 32:4471). However, Mr. Matheson also stated that he had no idea whether the pits had been revegetated and Mr. Phebus did not mention any revegetation of those pits, despite having his direct examination conducted by Mr. Matheson and despite testifying as to the removal of cacti for replanting where pits were dug in 1998 (Tr. v. 4:873-74; v. 32:4471). Thus, there is insufficient evidence of revegetation of the purported three large pits.

Charles Ager

Contestees' main expert witness was Dr. Charles Ager. Dr. Ager's credibility is questionable because of his actions relating to the so-called Delgratia salting scam, his evasiveness and lack of truthfulness during the hearing, and his bias in this proceeding. Much of the evidence regarding Dr. Ager's involvement in the Delgratia debacle resulted from the investigation of Special Agent August, a law enforcement officer for the BLM. Agent August, who is trained and experienced in investigatory techniques (see Tr. v. 40:6117-18), interviewed numerous people associated with Delgratia matter and received from them a number of documents.

Although the statements taken from these people and the documents produced by them are hearsay, this evidence is credible for a number of reasons. First, Agent August, who is trained to identify characteristics demonstrating untruthfulness, did not perceive such characteristics in his interviews with the relevant individuals (see Tr. v. 40:6171, 6185). Second, the written statements he took (all contemporaneous with his interviews) and documents he received (some are affidavits) are corroborative and consistent, not only in time but between individuals (see Tr. v. 40:6137-38; v. 41:6164-66, 6168, 6169-70, 6173, 6182-83; Exs. 75, 76, 83, 84, 85, 86). Third, Dr. Ager confirmed in his testimony the general sketch of the Delgratia debacle. Fourth, much of the evidence uncovered by Agent August was not rebutted by Contestees.

The Delgratia "salting scam" was precipitated by the location of a 9,000-acre block of 56 claims known as the "Josh claims" or "Josh project" (Tr. v. 19:3459-60; v. 20:3476). Those claims are a subset of Dr. Ager's larger Eldorado project (id.). The Josh claims were located pursuant to a partnership agreement executed in July 1993 by eight entities, including Contestee Pilot Plant and three companies for which Dr. Ager, his daughter, or his wife was President (see Tr. v. 20:3513-23; Ex. 19).

Mr. Matheson is the President of Pilot Plant, the registered agent of each of the remaining co-locators, and the Treasurer of the partnership (Exs. 19, 89; Tr. v. 20:3514-15). He is also the registered agent for Cactus Gold Corporation, Valley Gold Corporation, and Delgratia Mining Corporation (Delgratia) (Ex. 89), companies which are further discussed below. In addition, he disbursed funds for Dr. Ager to pay for various mining-related activities during the 1990's (Tr. v. 26:3425-29; v. 33:4784, 4787-90, 4799-4800).

The co-locators sold the Josh claims in August 1994 to Cactus Gold Corporation, a company in which Dr. Ager is indirectly the majority shareholder (Tr. v. 20:3519-23, 3529-32). In return for receipt of the claims, Cactus Gold assumed debts incurred in developing the claims, committed to developing and maintaining them, and agreed to the claims holders' retention of a royalty interest in the net profits of development (Tr. v. 20:3520-23). Pilot Plant still retains its royalty interest in the Josh claims (Tr. v. 20:3519, 3522-23; v. 25:3281-83, 3285, 3289)

In August 1996 the Josh claims were sold to Valley Gold Corporation, which is wholly

owned by the Nevada Gold Corporation, which, in turn, is wholly owned by Philgold Investment Inc. (see, e.g., Tr. v. 20:3523; Ex. 84, ¶¶ 10, 12; Ex. 85). At all relevant times, Dr. Ager was President of Valley Gold, Nevada Gold, and Philgold and a director of Valley Gold and Philgold (Ex. 85; Tr. v. 20:3523).

Fifty percent of Philgold's shares are owned by Dominion Explorers Inc. (Ex. 85). That corporation's President is Dr. Ager and it is indirectly owned by a discretionary trust in which Dr. Ager's wife and children are the beneficiaries (Ex. 85; Tr. v. 20:3534).

Meanwhile, in the mid-1990s, Dr. Ager began associating with Mr. Gunnison (Tr. v.19:3408). Prior to the fall of 1996, Dr. Ager spent about a week at EII's Phoenix facility operated by Mr. Gunnison, learning the steps and all but one of the chemical constituents involved in the proprietary thiourea leach process that Mr. Gunnison used to allegedly produce gold from Eldorado Valley material (Tr. v. 18:3160-61, 3164-68; v. 19:3360, 3384, 3388, 3390-91; Tr. v. 20:3559).

Based in part on this visit, Dr. Ager retained Mr. Gunnison to process with his thiourea leach drill samples taken from the Josh claims during the period of September 1996 through April 1997 (Tr. v. 18:3158-60; v. 19:3370-73, 3377-90; v. 20:3538). Cactus Mining Corporation, indirectly wholly owned by Dr. Ager who is its President, provided the drills and prepared the drill samples (Tr. v. 19:3412; v. 20:3528-29, 3532; Ex. 85).

On November 7, 1996, as a result of negotiations that began in the spring of 1996, Delgratia and Philgold executed an agreement under which Delgratia paid \$5,000,000 and 1,000,000 shares of stock valued at \$7.875 per share to Philgold for a 40% interest in Nevada Gold, agreed to expend \$5,000,000 on exploration and development of the Josh claims and issue an additional 1,000,000 shares of stock by May 1, 1997 for an additional 10% interest in Nevada Gold, and acquired an option to acquire a further 20% interest in Nevada Gold by expending an additional \$10,000,000 and issuing 2,000,000 more shares by November 8, 1998 (Tr. v. 19:3392-93; v. 20:3526-27, 3532-33, 3541; Ex. 83, p. 4; Ex. 84, ¶¶ 20, 21; Ex. 85, pp. 2-3; Ex. 86, ¶¶ 4, 6; Ex. 2, Att. 1-2b). Cactus Mining was designated as the operator to conduct the exploration and development and received at least \$1,500,000 for its services (Tr. v. 20:3528; Ex. 84, ¶ 22; Ex. 86, ¶¶ 22-24, 84). In addition, Cactus Mining and Dr. Ager acquired options to purchase a total of 1.65 million shares of Delgratia stock at \$6.00 per share (Ex. 85, p. 16; Ex. 86, ¶¶ 10, 12; Tr. v. 20:3533).

Two of the then-directors of the Delgratia Board, Eric Lavarack and David Manning, identified Dr. Ager as the "spokesman" or "representative" for Philgold during the negotiations with Delgratia (Ex. 83, p. 1; Ex. 84, ¶¶ 10, 12, 13; Ex. 86, ¶ 6). Dr. Ager did not fully disclose to the Delgratia Board or the governing securities commissions the extent of his family's financial interest in Philgold until 1997 (Ex. 84, ¶¶ 10, 12; Ex. 86, ¶ 6).

Messrs. Lavarack and Manning also averred that Dr. Ager showed the Delgratia Board a report regarding the Josh project (Ex. 21) prepared in August 1996 by a professional engineer,

Brian Mountford (Ex. 84, ¶¶ 14, 15; Ex. 86, ¶ 6). Mr. Mountford prepared the report for Dr. Ager as a personal favor without remuneration (Ex. 76, p. 3). He basically summarized data and information supplied by Dr. Ager; he did not perform a due diligence examination of the Josh project (*id.*)

That report discusses a geological resource of between 5 million and 15 million ounces of gold postulated for the Josh anomaly and includes an exploration map prepared by Dr. Ager showing a geochemical anomaly of extensive proportions, with gold values ranging from 1 gram per ton at the edges to 30 grams per ton in the richest zones (Ex. 21; Ex. 76, p. 3; Ex. 84, ¶¶ 14-16; Ex. 86, ¶ 8). The Delgratia Board relied upon the report in making its decision to purchase the interest in Nevada Gold, and the map was the single most important document in persuading Mr. Lavarack to agree to the purchase (Ex. 84, ¶¶ 14-16; Ex. 83, p. 1; Ex. 86, ¶ 8).

Dr. Ager characterized the arrangement with Delgratia as a joint venture to develop the Josh claims and asked Mr. Matheson how he wanted to participate in the venture (Tr. v. 16:2922; v. 19:3340; v. 41:6231). Mr. Matheson responded that he did not want to be involved with a public company (Tr. v. 16:2922-23; v. 41:6231).

They then agreed that Mr. Matheson would serve as a consultant, keeping Dr. Ager apprised of ongoing developments regarding material from the Eldorado Valley, in exchange for payments of \$4,000 per month and possibly stock options in Delgratia (Tr. v. 16:2922-23; v. 25:3186-88, 3288; v. 20:3552-53; v. 33:4794-97; v. 41:6231). Eventually, through Dr. Ager's efforts, Mr. Matheson did receive options to purchase 40,000 shares at \$6.00 per share (Tr. v. 14:106; v. 20:3527-28; v. 25:3282; v. 26:3355; v. 41:6231).

By December of 1996, Dr. Ager had become both the President and Chairman of Delgratia (Tr. v. 18:3119; v. 19:3393; Ex. 86, ¶¶ 10, 12). In those capacities he signed and issued press releases in February and March of 1997 reporting on assay results of drill samples processed by Mr. Gunnison indicating high gold values on the Josh claims (*see, e.g.*, Ex. 85, pp. 1-6; Tr. v. 20:3537-38). Those releases did not identify the assayer (Ex. 85).

As a result of the press releases, Delgratia's stock skyrocketed in value from \$13.25 per share on February 28, 1997, to \$34.75 per share on March 19, 1997 (Ex. 2, Att. 1-1c; Ex. 84, ¶ 31; Ex. 86, ¶ 13; Tr. v. 20:3535-37). Press accounts of skepticism by Nevada mining officials and press revelations that Dr. Ager had a financial interest in the claims and that Mr. Gunnison, Dr. Ager's personally selected assayer, was a convicted felon and not a registered assayer caused Delgratia's stock to fall in the following weeks to as low as \$6.00 per share (Ex. 2, Atts. 1-1a to 1e; Ex. 84, ¶ 40; Ex. 86, ¶ 15). Eventually, the stock bottomed out at around \$0.37 per share in December 1997 (Ex. A-91, p. 36).

In reaction to the negative press, several press releases signed by Dr. Ager were issued in April 1997 indicating that independent labs (Mountain States R&D International Inc. (Mountain States) and Jacob Laboratory) had confirmed high gold values from Josh claim samples collected and assayed in a thoroughly professional manner consistent with the highest industry standards

(Ex. 85). Dr. Ager failed to disclose that those samples had first been processed by Mr. Gunnison and that the independent labs produced assay results of only background gold levels for samples which did not pass through Mr. Gunnison's hands (Ex. 17). Nor did Dr. Ager disclose the background level results to his fellow Board members until June of 1997 (Ex. 84, ¶¶ 33-39).

The unfavorable press accounts also precipitated Dr. Ager's hiring, on behalf of Delgratia, Mr. Mountford and Morris Beattie to perform an audit of the work that had been performed on the Josh claims (Ex. 17, §§ 1, 2; Ex. 76, p. 2; Ex. 84, ¶ 32; Ex. 86, ¶ 17). Messrs. Mountford and Beattie enjoy "excellent" reputations in the mining industry (Tr. v. 20:3494).

In a May 30, 1997 report, Messrs. Mountford and Beattie determined that the samples processed by Mr. Gunnison had been salted and that the Josh claims, "beyond any question," contain only "insignificant" amounts of gold (Ex. 17, §§ 1, 2; Ex. 84, ¶¶ 32, 33; Ex. 85, p. 26). A subsequent audit by another reputable entity, Behre Dolbear and Company, Inc., confirmed that "no gold soil anomaly exists" (Ex. 18, p. 11; Ex. 84, ¶ 45; Ex. 86, ¶¶ 34, 37; Tr. v. 20:3542; v. 14:113).

As a result of the Mountford-Beattie report, Delgratia, Dr. Ager, and others were sued by Delgratia stockholders in many separate actions (Tr. v. 20:3539; v. 41:6168; Ex. 86, ¶ 26; Ex. 84, ¶ 43; Ex. A-91, p. 36; Ex. 88). Dr. Ager was a defendant in his individual (personal) capacity (Ex. 87, ¶¶ 18b, 18h, 126-28; cf. Ex. 66, p. 265). In general, the plaintiffs alleged, among other things, that Dr. Ager, when he was Chairman of Delgratia, failed to disclose his financial involvement in the companies holding and exploring the Josh claims (see, e.g., Ex. 87, ¶ 36) and that he and others disseminated false and misleading information in order to reap the financial benefits of artificially inflating the price of Delgratia stock (see, e.g., Ex. 87, ¶ 39).

The consolidated suits were settled, apparently by Delgratia agreeing to issue to the plaintiffs 2.5 million shares of Delgratia stock with a market value of about \$0.25 per share and to pay \$500,000 to administer the claims verification process (Tr. v. 20:3539-40; Ex. 86, ¶ 43). On August 8, 1997, Dr. Ager resigned from his Delgratia President position after being forced to take a leave of absence, and he did not run for re-election to the Delgratia Board in 1997 (Ex. 84, ¶ 44; Tr. v. 20:3541-42).

NASDAQ, on which Delgratia was listed, halted trading and eventually delisted Delgratia because of the scandal (Ex. 83, p. 2; Ex. 84, ¶¶ 9, 43; Ex. 86, ¶¶ 16, 28; Ex. A-91, p. 9; Tr. v. 20:3541). The Federal Bureau of Investigation (FBI), the Secretary of State for the State of Nevada, and other law enforcement and regulatory agencies commenced a number of investigations into the Delgratia debacle (Ex. 84, p. 3; Ex. 86, ¶ 16; Tr. v. 14:116; v. 20:3578).

During the investigations stemming from the Delgratia scandal, Mr. Matheson was the primary defender and champion of the Josh claims, Dr. Ager, and Mr. Gunnison (see, e.g., Ex. A-91; Tr. v. 14:113-29; v. 119; v. 16:2920; v. 20:3529; v. 22:2519-21; 26:3495-98, 3511-

24). Mr. Matheson testified that he spent over \$10,000 for air fare and three months attempting to persuade the investigating authorities that there was no scandal (Tr. v. 16:2920). Those efforts included arranging demonstrations of how to assay the Eldorado Valley material for FBI and State investigating officials (see, e.g., Tr. v. 14:116-17; v. 22:2519-21).

While there is no evidence that Dr. Ager has been charged with a crime or found liable for fraud or other misconduct related to the debacle, and although he did not exercise his Delgratia stock options or sell his stock (Tr. v. 20:3550-51), the record nevertheless shows that Dr. Ager has acted deceptively and that his credibility is questionable. Some of his deceptive conduct has already been discussed.

Another example is his reply to a NASDAQ request to Delgratia, then still chaired by Dr. Ager, for information about the Josh project (Ex. 86, ¶ 16). That request was made after the press began releasing negative stories regarding Delgratia.

In response, Dr. Ager submitted the exploration map of the Josh project that had been originally used to persuade the Delgratia's Board to purchase an interest in Nevada Gold (Ex. 83, p. 3; Ex. 84, ¶¶ 14, 16, 19, 46; Ex. 86, ¶ 8; Tr. v. 61:6179-80). However, the version of the map Dr. Ager sent to investigators had been altered by hand to show that the gold values on the Josh claims were only 1/10 as high as originally depicted. This was accomplished by changing the units for the values shown on the map from parts per million (ppm) to ppm times ten to the minus one power (Ex. 83, p. 3; Ex. 84, ¶ 49; Ex. 86, ¶ 33; compare Ex. 20 (map originally provided to Delgratia) with Ex. 21, fig. 7 (map provided to NASDAQ)).

Under cross examination, Dr. Ager admitted to making the alteration, but alleged that he did so to indicate the values in head ore rather than the values in concentrate (Tr. v. 20:3546-47). This explanation is deemed not credible.

Mr. Mountford, who used the original map and other information provided to him by Dr. Ager to produce the August 1996 report (Ex. 21), stated to Agent August that Dr. Ager's assertion that one of the maps represents values in concentrate is a "total lie" and that nobody in the mining industry uses such an approach (Tr. v. 41:6178; Ex. 76, p. 3). Mr. Edward Jucevic, one of Contestant's mining industry experts with extensive experience (Ex. 71), testified that he had never heard of such a map of soil samples depicting values in concentrate, and that "one would not expect the concentrates to be consistently and precisely ten times as much value" as the head ore, causing him to be "highly suspicious." (Tr. v. 40:6083-84).

If, in fact, the original map was values in concentrate, Dr. Ager's reliance upon it and the August 1996 report to convince the Delgratia Board to purchase 40% of Nevada Gold was a deceptive practice. This is so because neither the map nor the accompanying August 1996 report indicate that the results are values in concentrate and no one would expect the results to be reported that way.

When questioned as to his involvement in negotiations leading up to Delgratia's

acquisition of 40% of Nevada Gold, Dr. Ager replies were evasive, stating that he played no role on Delgratia's behalf, that he did not approach Delgratia to interest it in the property, that the possibility of acquisition was first discussed through mutual contacts, and that he did not go out looking for a partner in the Eldorado Valley (Tr. v. 20:3527). What he did not say is that he was the spokesman for Philgold during the negotiations.

Although Dr. Ager testified that he had nothing at stake in this proceeding (see, e.g., Tr. v. 18:3060; v. 20:3511, 3513), he is far from an impartial witness. He and Mr. Matheson have been closely associated in promoting the mineral potential of Eldorado Valley for their mutual financial gain.

Dr. Ager has known Mr. Matheson as a friend and business associate for over ten years, and they have worked closely in developing the Eldorado Valley during most of that period (see, e.g., Tr. v. 13:2348-49; v. 14:13; v. 19:3325; v. 21:2425; v. 25:3273, 3279-80, 3297-98). They and/or their companies co-located the Josh claims, cooperated in and shared data from various testing programs, transferred consulting fees, royalty interests, stock options, and claim interests to each other, and held financial interests and positions in the same companies.

During the investigations stemming from the Delgratia scandal, Mr. Matheson was a primary champion of the Josh claims, trying to convince the investigators that gold is present, that the gold is assayable if the certain methods are used, and that no wrongdoing occurred. With the Mijo claims now under investigation in this proceeding, Dr. Ager is serving as a chief witness on Mr. Matheson's behalf.

Further, both Dr. Ager and Mr. Matheson testified that the Mijo claim material is essentially the same as the material elsewhere in the Eldorado Valley, including that from the Josh claims and claims owned by Dr. Ager or his companies, and that the material contains precious metals which can only be assayed and recovered using special and often proprietary techniques (see, e.g., Exs. 44, A-58; Ex. 2, pp. 10-11; Tr. v. 13:2235, 2263; v. 17:3004, 3008-13, 3045-49; v. 18:3061, 3132-33, 3164-70, 3197-98, 3208; v. 19:3366, 3369-70, 3393-97, 3404, 3425, 3437-43, 3448, 3450-52; v. 33:4746-52). This position is based, at least in part, upon shared data and testing. A finding that no discovery exists on the Mijo claims or that they are not held in good faith would be detrimental to this position and to Dr. Ager's prospects for avoiding negative repercussions from his involvement in the Delgratia debacle (see, e.g., Tr. v. 5:164, 282 (Guay stating that "Ager is accused of fraud" and may be motivated "to keep out of jail").

Jerry Henderson

Since approximately 1987, Mr. Henderson has conducted research and development and assays for Pass Minerals and Pilot Plant (Tr. v. 3:632, 635-36, 670-71). Contestees did not present evidence of Mr. Henderson's education or formal training, but he did state that he learned to fire assay while working for Union Assay for 15 months and estimated that he had conducted 100,000 to 150,000 assays during the years 1956 to 2000 (Tr. v. 3:670, 684-85).

Despite this experience, he has thrice failed the State of Arizona's test to become a registered assayer (Tr. v. 3:670, 684-85). This fact as well as several others lead to the conclusion that his testimony and assays have little probative worth.

Those facts include his poor reputation in the mining industry (Tr. v. 39:5912-13) and his failure to use proper testing techniques and equipment, including running blanks and standards and using a mass balance, metallurgical balance, and sufficiently precise scales (Ex. 2, p. 14, 32, Atts. 11B-5b to -5d; Tr. v. 2:411-15). Also, his lab is very dirty and in poor condition (Ex. 2, p. 34, Att. 11B-5c, photos L-15, L-18, L-24, L-25; Tr. v. 2:412-13), which is unacceptable by industry standards because of the risk of cross-contamination (Tr. v. 2:412-14).

Further, the mineral report demonstrates that Mr. Henderson likely salted a sample provided to him for the mineral examination of the Mijo claims. Before the mineral examiners visited Mr. Henderson's lab to observe him assay samples for the mineral examination, both Messrs. Henderson and Matheson had indicated to the examiners that the Mijo material contained native or elemental silver (Ex. 2, pp. 31, 34). While at the lab, Mr. Henderson "took great efforts" to point out to the examiners silver balls that he apparently recovered using a U-Tech shaker table to process samples provided to him by the examiners (*id.*, p. 34). However, unbeknownst to Mr. Henderson, the samples from which he was producing the silver balls were blanks taken from the backyards of the Government mineral examiners (Ex. 2, pp. 25, 27, 34, photos L-29, L-30). Moreover, the size of the silver balls were such that it was physically impossible for them to be in the size fraction in which they were found unless they had been deliberately added (Ex. 2, pp. 34-35, photos L-31, L-37). In addition, the silver balls did not have the same characteristics of the sample material that had been processed, further indicating that the silver balls had been deliberately added (Ex. 2, pp. 34-35, photos L-32, L-38, L-39).

Contestees suggested during the hearing that Mr. Henderson had no motive to salt the samples, but the record reveals a possible motive. Mr. Henderson has been paid to assay the Eldorado Valley material for years (*see, e.g.*, Tr. v. 22:2678; v. 26:3424, 3432-33). If he failed to find value, especially under the scrutiny of the mineral examiners, this source of income might have stopped because Mr. Matheson testified that he does not use assayers who can not show value in Mijo material (Tr. v. 26:3379). He not only had a possible motive, but also he had opportunity to salt the samples undetected (Ex. 2, photos L-26, L-28). During the hearing, when Mr. Henderson was asked about the mineral report's conclusion that the samples had been salted, he had no explanation other than to deny that salting occurred (Tr. v. 3:645-47).

Mr. Henderson's lack of credibility is further demonstrated by his inability to produce accurate results from standards and blanks and by the non-reproducibility of his results (Ex. 2, pp. 31-35). Mark Lewis, an assaying expert with over 22 years of experience (Tr. v. 2:396-99, 432, 441; Ex. 11), was retained by the Government mineral examiners to learn and use the scorification technique Mr. Henderson claimed could reliably assay Mijo material (Tr. v. 2:404, 409; Ex. 2, p. 31). Mr. Lewis then performed both Mr. Henderson's procedure and a standard fire assay on splits of samples (blanks, standards, and Mijo material) which were also processed by Mr. Henderson, with some being assayed by him and some being sent to another lab for

platinum group element analysis (Tr. v. 2:407-08, 416-19; Ex. 2, pp. 31-35).

Mr. Lewis' results using both Mr. Henderson's scorification procedure and a standard fire assay on the splits "were, in general, identical within small amounts of variation and within the degree of the difference in detection limits." (Tr. v. 2:417-18; Ex. 2, Atts. 11B-4b, -4c). In contrast, Mr. Henderson produced an assay report for splits of the same samples, including blanks and standards, that showed "substantially higher" values (Tr. v. 2:419; Ex. 2, Atts. 11B-7a to -7g). This evidence demonstrates that assay results from Mr. Henderson cannot be considered reliable and accurate.

Charles Moore

Charles Moore, who has been mapping subsurface structures in the mining industry using the "Moore Radiometer" since 1979 (Tr. v. 7:1112-13, 1117, 1127; v. 8:1323-32, 1364), also testified for Contestees. His formal education and training consists of one geology course taken at Carson City Community College, an extension of the Mackay School of Mines (Tr. v. 7:1112; v. 8:1335).

As previously mentioned, Mr. Moore testified that he used the "Moore Radiometer" and sampling to identify the "blue structures." The "Moore Radiometer" is a term that Mr. Moore uses to refer to an EM-16 machine made by a company called Geonics and the allegedly unique and proprietary method which he uses to analyze the output generated by the EM-16 (Tr. v. 7:1118-22, 1148-49; v. 8:1323-29).

Mr. Moore's description of his analytical method was somewhat confusing and lacking in detail due, in part, to his reluctance to describe that which he considered proprietary (see, e.g. Tr. v. 8, 1328-29). Mr. Moore testified that the EM-16 allowed him to discern gamma rays "emanating from the center of the Earth to the surface" by which he identified sub-surface structures (Tr. v. 8:1324, 1328).

He further testified that it could identify structures at great depth, but that "the EM-16 is really not very accurate after, oh, 1500 feet or so." (Id.:1325-26) According to Mr. Moore, the effectiveness of an EM-16 is not limited by clay or surface water (id.:1364-67).

This testimony is deemed not credible both because Mr. Moore did not adequately explain his analytical methods and because unrebutted testimony from Roger Haskins identified numerous flaws in Mr. Moore's testimony. Mr. Haskins has expertise in the use of the EM-16, having used one extensively while employed by the Exploration Operations Branch of the Manitoba (Canada) Department of Energy and Mines and having wrote a detailed BLM handbook regarding the use of it and similar devices (Tr. v. 12:2167, 2174-75; Ex. 16).

Mr. Haskins testified that it is "totally impossible" for the EM-16 to be used to detect gamma rays from the center of the earth for two reasons: first, gamma rays travel through soil and rock for only 12 feet or so before they are absorbed; and, second, an EM-16 measures radio

frequency waves, not gamma radiation (Tr. v. 12:2184-85). Mr Haskins also stated that an EM-16's depth detection limit is approximately 200 feet, with any clay or surface water interference reducing the limit to 40 to 50 feet (id.:2177), contrary to Mr. Moore's assertions.

Mr. Haskins further testified that the standard method for interpreting EM-16 data includes use of a "Fraser filter" (Tr. v. 12:2178-82; Ex. 16, pp. 100-13), yet Mr. Moore was not familiar with a Fraser filter (Tr. v. 8:1366). That Mr. Moore's analytical methods are not generally accepted is further evidenced by Mr. Moore's map of the claims area (Ex. A-50), which, according to Mr. Haskins, does not appear to reflect data generated from an EM-16 and does not resemble any presentation or form of EM-16 data familiar to him (Tr. v. 12:2179-80).

Mr. Moore's credibility is further damaged by inconsistencies in his testimony. He identified specific samples which he took in February and April of 1998 and the method and location of the samplings (see, e.g., Tr. v. 27:3713-17; 3720-21). Also, he marked the approximate sample locations on sample data sheets and then signed the sheets (Ex. A-129, pp. 10, 11, 12). Yet, he also testified that he did not move to the Las Vegas area to begin working with Contestees until May or June of 1998 (Tr. v. 8:1341-43), after the samples were taken.

Merwin White

Mr. White testified for Contestees as a self-described metallurgical chemist based mostly upon experience (Tr. v. 8:1441-42). He also majored in chemistry at the University of Utah for 3½ years before quitting school (Tr. v. 8:1442). He worked for Kennecott Copper for 22 years, working his way up from assayer to senior chemist to metallurgical engineer to the person responsible for running a gold refinery, and he has been conducting assays since 1938 (Tr. v. 8:1444, 1450-52).

Despite his longevity, Mr. White's reputation in the mining industry is "very poor" (Tr. v. 5:179; v. 20:3481, v. 39:5914; Ex. 10, p. 5; Ex. 75, p. 1). He has been criticized in two reports, one being the Mountford/Beattie report regarding the Delgratia salting scam and one pertaining to the mining operations of Naxos Resources Ltd. (Naxos) near Death Valley, California.

Messrs. Mountford and Beattie reported that Mr. White, in addition to Mr. Gunnison, generated assay results for material from the Josh claims which were used to promote the Josh claims to the public (Ex. 17, §§ 1, 2). Mr. Mountford and Dr. Beattie took their own samples from material discarded from earlier drilling and testing, and sent splits to Mr. Gunnison at EII and Mr. White and retained splits for their own chemical analyses (id., § 4.1). The EII results came back showing insignificant gold concentrations, but Mr White reported high numbers that had "no relationship" to the EII values or to the reports finding that the claims contained only insignificant amounts of gold (id., § 2, 4.1). In addition, Mr. White's results "showed no consistency at all and point to possible problems in the laboratory." (Id., § 4.1)

The other study criticizing Mr. White is a 1996 study commissioned by the Alberta Stock Exchange, on which Naxos was listed, to investigate, among other things, an alleged proprietary process used by Mr. White for Naxos which purportedly showed commercial values of gold (Ex. 80, pp. 1-2). The commissioned consultants concluded, based on their observation of Mr. White's work and their own analyses, that "Mr. White . . . do[es] not appear to understand the impacts of potential contamination" (*id.*, p. 13), that the potential for contamination in the facility he used "was serious" (*id.*, p. 14), that it was "clear" that the reagents used by Mr. White were "contaminated" (*id.*, p. 14), that another lab (Chemex Labs, Inc.), following Mr. White's procedure according to his instructions and to his satisfaction, did not detect gold above background concentrations (*id.*, pp. 15-16), and that Mr. White made numerous claims evidencing his lack of scientific understanding (*id.*, p. 19). The consultants recommended to the Alberta Stock Exchange that all analytical results reported by Naxos, other than those based on conventional fire-assay procedures, "should be retracted in full." (*Id.*, p. 21)

The Government mineral examiners likewise noted the disorderly condition of Mr. White's lab and his reliance on improper lab technique when they visited the lab in 1999 (Ex. 2, pp. 28, 30, photos L-4, L-10). As reported in the Mineral Report, he assayed two splits of each sample provided by BLM, including grinding and reassaying the slags five times and, for a couple of the samples, grinding and reassaying the cupels (Ex. 2, pp. 28-29, Atts. 11B-3a thru -3d).

One of the specific examples of improper lab techniques involved his lab technician brushing all the slag from assays of numerous samples into the same bucket, which also contained slag from an unknown source (Tr. v. 36:5297-98; v. 39:5828-29). Mr. White later generated a report of results of assays of those samples which indicates that the slag for each sample was re-assayed and a corresponding value found for each re-assayed slag (Ex. 2, Atts. 11B-3a thru -3d; Tr. v. 39:5829). Given that the slags were all combined together along with other slag material, the report is either deliberately misleading or the product of incompetence.

As previously mentioned, the samples provided by BLM to Mr. White included complex blanks from the mineral examiners' yards but identified as samples from the Mijo claims (Ex. 2, pp. 28-31). Mr. Clay testified that the material from their yards was a "clean wash decomposed granite" and that he had bought the material for his yard (Tr. 15:251). The assay report signed by Mr. White evidences incompetency, as his lab found the three highest gold concentrations of 0.200, 0.092, and 0.066 troy ounces per ton in the blanks and the spread of reported results for the splits of the same samples were excessive (Ex. 2, pp. 29-30).

Mr. White ran his own blanks with the initial assays (but not with the reassays) and reported no value in the blanks (Ex. 2, Atts. 11B-3a thru -3d), indicating "that he was not salting himself," according to Mr. Matheson (Tr. v. 22:2595). However, Mr. Clay testified that a proper contamination detection procedure should have included reassaying the slags and cupels for the blanks, as was done for the BLM samples (Tr. v. 35:5163-64).

In an apparent attempt to salvage his credibility and to imply that the blank yard samples may actually have contained gold, Mr. White made farfetched statements and damaging admissions. He testified, based upon personal sampling and assaying experiences, that a sample taken anywhere in the Mormon Mesa, an ancient seabed apparently extending from southern Utah into the Las Vegas area and Arizona, would probably contain gold valued, on average, at 0.20 ounces per ton (Tr. v. 8:1460-63, 1526-29). He explained that his methods of repetitively reassaying the slags and cupels or leaching samples detect much more value than a standard fire assay and that he often finds values in "so-called" blank samples (Tr. v. 8:1460-63). His explanation included an acknowledgment that he doesn't know why he is able to detect more value (Tr. v. 8:1459-60).

In summary, the record demonstrates that the assay work of Mr. White and his lab cannot be considered reliable and that Mr. White's credibility is questionable.

Robert Gunnison

Contestees also relied heavily on alleged statements and work attributed to Mr. Gunnison, who they assert has developed a proprietary thiourea leach process that will recover commercial quantities of precious metals from Mijo material. Although Mr. Gunnison did not testify, a number of witnesses testified as to his work and statements, and Contestees entered into evidence two affidavits by Mr. Gunnison, although they were not admitted for the truth of the matters asserted therein (Ex. A-24, tabs 20, 21; see Tr. v. 13:2218-23).

Mr. Gunnison was present at the outset of the hearing and intended to testify, but he left the courtroom when informed that counsel for the Contestant was entitled to probe into his assertedly proprietary leach process for extracting precious metals from Mijo material (see, e.g., Tr. v. 10:1800; v. 15:158; v. 22:2639-40; v. 38:5761-62). Mr. Gunnison also twice refused the mineral examiners' requests to perform tests for them (Tr. v. 36:5430-31; v. 39:5820).

Mr. Gunnison's work lacks probative value because he has been convicted of felonies involving dishonesty, because he is substantially implicated in the Delgratia salting scam, and because his qualifications, experience, reputation, and techniques are either poor or not sufficiently described. Mr. Gunnison was convicted in 1975 of five felony counts, including fraud and conspiracy, arising from the sale of unregistered securities (Ex. 2, p. 10, Atts. 8-2a to -2c; Tr. v. 40:6130-31). During the hearing, Mr. Matheson contended that Mr. Gunnison's convictions had been overturned on appeal (Tr. v. 41:6294-95), but this contention was refuted by the testimony of Special Agent August who had examined Mr. Gunnison's official criminal history record (Tr. v. 40:6131).

Contestees contend that a 1986 report by Pincock, Allen and Holt (PAH) (Ex. 2, Atts. 9-9b to -9g) vindicates the efficacy of Mr. Gunnison's proprietary leach process and hence

Mr. Gunnison himself.⁴ (See, e.g., Tr. v. 14:132-33; v. 18:3142-44). Dr. Ager testified that the Gunnison process has not changed since 1986 and that the PAH report pertains to the Gunnison process, although neither Mr. Gunnison nor EII is mentioned in the report (see, e.g., Tr. v. 18:3138-39). The PAH report indicates that the process assessed was detecting gold values where “classical methods” were not, but states that further testing was necessary before the process could be declared a “proven technology” (Ex. 2, Att. 9-9h).

Moreover, in an interview with Special Agent August, the author of the PAH report, John Rozelle, stated that PAH has no interest in the Eldorado Valley because it has not found any properties worth investing in (Ex. 79, p. 2). If PAH had been persuaded that a process exists for extracting precious metal from the Eldorado Valley, it likely would have a different view.

Also, Mr. Gunnison has violated Arizona law by assaying material there without being a registered assayer in that state (see, e.g., Tr. v. 22:2675). There is no evidence that he has received training in assaying, as his college degree is in accounting and his relevant experience is vaguely described as “20 years in precious metals recovery business”, with 14 of those years working on Eldorado Valley material (Ex. A-24, tabs 20, 21). Contestees’ own witnesses recognized that Mr. Gunnison has a poor reputation and is viewed by some as a scam artist (Tr. v. 5:90, 158, 215; Tr. v. 18:3156-57; v. 20:3492; see Ex. 77, p. 1).

Not surprisingly, Mr. Gunnison discovered by accident the chemical which allegedly stabilizes the thiourea leach (Tr. v. 21:2478) and Dr. Ager testified that Mr. Gunnison did not fully understand his own leach process (Tr. v. 20:3575). Further, it is not possible to evaluate whether there is a scientific basis for the effects of the stabilizing chemical without disclosure of the chemical’s name.

Ian Matheson

Mr. Matheson served as the Contestees’ representative as well as the Contestees’ primary witness. His college degree is in accounting (Tr. v. 13:2246-48). His occupations have included accountant, syndicator of real estate, including oil and gas properties, and owner of a construction company (which built bridges and two mines) (Tr. v. 13:2248-58). His involvement with the mining claims in the Eldorado and Paiute Valleys was his first venture in the mining business (Tr. v. 25:3312-19). He is not a professional assayer, mineralogist, mining engineer, or geologist (Tr. v. 15:220; v. 21:2742).

The record contains numerous admissions by Mr. Matheson that he lacks the education and experience to understand various technical aspects of mining the Mijo claims, such as the

⁴Contestees also claimed that a number of other reports all say “basically the same things” as the PAH report (Tr. v. 14:132-33; v. 15:156). However, these other reports, submitted as Exhibit A-68, were not received because Contestees failed to provide sufficient foundation (Tr. v. 15:167, 179; v. 18:3127-58).

geology and metallurgy (see, e.g., Tr. v. 26:3511; v. 31:4352; v. 32:4456, 4487, 4539, 4578; v. 33:4666-69). Consequently, his layman opinions regarding those technical aspects are entitled to little weight.

As for the remainder of his testimony, his credibility is suspect. This follows from several facts. First, Mr. Matheson incorrectly testified regarding notations he added to an assay report from Mountain States (see discussion below regarding data set 29).

Mr. Matheson also testified and signed sample data sheets indicating that Mr. Moore took samples in December 1997 and January 1998 (Tr. v. 22:2669-73; Ex. A-129, pp. 8A, 10). He also signed data sheets showing that Mr. Moore took samples in February and April of 1998 (Ex. A-129, pp. 11, 12). Contrary to these representations, Mr. Moore testified that he did not move to the Las Vegas area to begin working for Contestees until May or June of 1998 (Tr. v. 8:1341-43).

Additionally, Mr. Matheson testified that Mr. Gunnison would have been happy to run a test of Mijo samples for the mineral examiners but that they never asked him to do so (Tr. v. 22:2529, 2532-33). In fact, the mineral examiners asked Mr. Gunnison to test samples, both directly and through Mr. Matheson, but he refused (Tr. v. 36:5430-31; v. 39:5820).

According to Mr. Matheson, each CSR drill hole was monumented with a stake surrounded by a pile of rocks immediately after the hole was drilled (Tr. v. 14:73-75, 89-91; v. 16:2944; v. 22:2582). Those holes were drilled on February 22, 1999. Mr. Clay convincingly demonstrated that Mr. Matheson's testimony was false by referencing two photographs of the area in which CSR drill hole no. 2 was located (Ex. 68), one taken at the time of the examination in March 1999 which shows no rock pile or other monument and one taken in April 2001 which does contain a rock cairn and stake (Tr. v. 40:5979-5982).

One of the persons upon whom Mr. Matheson relied to assay material was Robert R. Barefoot, who conducted the assays in his lab in Wickenburg, Arizona, and who Mr. Matheson identified as a chemist (Ex. 2, p. 16; Tr. v. 30:4116). To establish Mr. Barefoot's qualifications, Mr. Matheson told the mineral examiners that Mr. Barefoot was a well-known assayer from a college in Canada who had written several geochemical publications under the name R. R. Barefoot, including an assay manual co-written with Dr. Van Loon of the University of Toronto (Ex. 2, p. 16; Atts. 9-8a, 9-8b, 9-8s). In so doing, Mr. Matheson carelessly or intentionally misrepresented Mr. Robert R. Barefoot to be Dr. Ronald R. Barefoot, an analytical geochemist and professor emeritus, University of Toronto, who has never done work in Arizona (Ex. 2, Atts. 9-8a, 9-8b; Tr. v. 36:5374-75).

Mr. Matheson also testified misleadingly that the mineral examiners had "suggested" that they use Dr. Jordan (aka MRAL labs) as an "umpire assayer" to address the disparity between the assay results of Mr. White and those of Legend, reported on March 16, 1999, for the BLM field examination samples taken on March 9, 1999, and that, at the time, Mr. Matheson had not worked with Dr. Jordan for "years." (Tr. v. 13:2299, 2306, 2313-15, v. 16:2927, 2941;

v. 22:2525; Ex. 2, Atts. 11B-3a, 11B-4b; see also Ex. F). The testimony of the mineral examiners, corroborated by documentary evidence, shows this to be untrue (Tr. v. 1:153-62; v. 40:5983-84; Ex. A-129, pp. 21-1, 21-2).

As that evidence demonstrates, Mr. Matheson, rather than the mineral examiners, suggested using Dr. Jordan as the “umpire assayer” and Mr. Matheson had used Dr. Jordan to perform assays on March 12, 1999,⁵ only weeks before he made the suggestion. On surrebuttal, Mr. Matheson admitted that he had enlisted Dr. Jordan’s services to assay a sample not long before making the suggestion and explained his prior incorrect testimony as a product of his misunderstanding of the question propounded to him (Tr. v. 41:6208). He elaborated that the sample had been taken by him from the first pit dug by BLM on the first day of the field examination, that the assay results had been given to BLM, and that he did not believe the question pertained to “my relations when I was dealing with the BLM.” (Id.). This explanation is not convincing.

Additionally, Mr. Matheson supported Mr. Phebus’ untruthful claim that three large pits were excavated on the Mijo claims in 1990 and 1991. Mr. Matheson, acting as Contestees’ advocate, not only elicited this testimony, he testified as to the existence of those “three major pits” or three “major testing areas” (Tr. v. 21:2479; v. 22:2569-70; v. 25:3378; v. 41:6227, 6301).

When he was specifically questioned about their existence on cross-examination, he stated that he saw testing equipment (a loader, backhoe, and screening plant), but he would not state that he actually saw the pits, despite visiting the Becki M millsite three to four times per week and occasionally walking out on the Mijo 16 claim, which reportedly contained a pit only a couple hundred feet from the millsite (Tr. v. 32:4431-51). Furthermore, Mr. Phebus testified that the pits were obvious (Tr. v. 38:5627-28).

The next day, after talking to Mr. Phebus, Mr. Matheson testified that he recalled seeing berms as well and that the berms, which consisted of material removed from the pits, likely blocked his view of the pits (Tr. v. 33:4742-46). This testimony, in conjunction with his testimony that the fictitious pits existed, is inconsistent and not credible.

Mr. Matheson’s testimony regarding the origins of the so-called “Belgian” assay technique is also suspect. He presented Exhibit A-16 as a description of the procedure that Union Miniere purportedly sent to him. Dr. Anderson provided a copy of Exhibit A-16 to officers of Union Miniere and they indicated that Union Miniere would never have used such a novel procedure (Tr. v. 38:5680).

⁵There are two assay reports in evidence, one dated 2/12/99 and one dated 3/12/99 (Ex. A-129, pp. 21-1, 21-2). The correct date appears to be 3/12/99 because the sample reportedly was taken from the first hole dug by BLM on March 9, 1999 (Tr. v. 41:6208).

They identified the small sample size of 2 grams (as opposed to the standard size of 29.166 grams) as being novel and prone to less precise and accurate results (*id.*). In a letter to Mr. Shumaker, Union Miniere officers also indicated that the type of flux they use

is basically used for lead assay work by most of the precious metal labs over the whole world. There may be some variations in the composition from one lab to another, but these are not fundamental. We like to emphasize that there does not exist a so-called "Belgium flux" capable to assay precious metals in whatever material, where other lead based fluxes would fail.

(Ex. 61, p. 3).

Finally, Mr. Matheson undermined his credibility by making farfetched statements. For example, he testified that Dr. Ager, Mr. White, and he have tested samples from Hoover Dam on the Arizona/Nevada border all the way to Phoenix, Arizona and found "acceptable" gold values in most cases (Tr. v. 22:2603-04). The apparent purpose of this statement was to try to bolster the credibility of Contestees' assayers, who found high gold values in the complex blanks from the yards of the Arizona residences of Messrs. Clay and Shumaker, by implying that those blank samples may have contained gold.

B.

The Claims Do Not Contain Valuable Minerals

1.

Contestant's Evidence Convincingly Shows That Precious Metals Above Average Crustal Abundance Levels Do Not Exist On The Mijo Claims

At Contestant's request, numerous assaying and other analytical techniques, including fire assay, inductively coupled plasma (ICP) analysis, neutron activation (NA) analysis, thiourea leaching, x-ray diffraction and electron microscopy, were applied to samples from the Mijo claims. The results from each of those techniques show that precious metals do not exist on the Mijo claims above average crustal abundance.

Most of the samples subjected to those techniques were collected during the mineral examination. The mineral examiners attempted to duplicate the Contestees' methods of sampling to the extent possible (Ex. 2, pp. 20-21). Thus, they typically cleared surface material with a backhoe to a depth of 1½ to 6 feet before sampling (Ex. 2, pp. 23-26). Then, from the cleared area they took a channel sample and placed the sample into five-gallon buckets (*id.*). The samples were screened to ¼-inch minus and then some of them were separated into magnetic and non-magnetic fractions with a shop magnet, as Contestees usually did (*id.*). They also took a couple of bulk samples (Ex. 2, pp. 20-26).

These samples, along with standards and blanks for quality assurance purposes, were sent to numerous laboratories and subjected to numerous analytical techniques. The results are deemed reliable and accurate because they consistently show (1) only average crustal abundance levels of precious metals for the samples from the Mijo claims and (2) precious metal content within the appropriate range for both the standards and blanks (see, e.g., Ex. 2).

a.

Fire Assay Results Show The Absence Of Valuable Minerals

The following entities hired by Contestant performed fire assays on samples from the Mijo claims, all of which showed precious metal content of only average crustal abundance: Bondar Clegg, Chemex, Legend, CAMP, NBMG, and Dr. Ralph Pray (see, e.g. Exs. 2, 4, 5, 43, 45, 67; Ex. 39; pp. 7-8, App. VI; Tr. v. 39:5904). The record shows that the first three entities have excellent reputations in the mining industry for using solid techniques and generating reproducible work (see, e.g., Tr. v. 1:36; v. 2:203; v. 19:3453; v. 38:5663-64). As part of Montana Tech of the University of Montana, CAMP provides to the mining industry research consulting services pertaining to a wide range of mineral and metallurgical activities (Tr. v. 38:5661-62; v. 39:5842). Dr. Pray, who has a Doctor of Science degree in metallurgical engineering and 50 years of experience in the mining industry, has performed approximately 45,000 assays (Ex. 65; Tr. v. 39:5898-5900).

Contestees argue and presented testimony that standard fire assay techniques cannot reliably assess the precious metals in the material from the Mijo claims because of the small size of the gold particles, the geochemical structure and components of the material encasing the gold, and other reasons which are purportedly proprietary. However, the weight of the evidence does not support their argument.

The reliability and accuracy of the standard fire assay techniques used by the entities hired by Contestant to analyze the material from the Mijo claims is demonstrated by at least three factors. First, the average crustal abundance levels of precious metals found by those entities using standard fire assay techniques were confirmed by several other analytical techniques. Second, the reliability of standard fire assay techniques is not the subject of serious debate in the mining industry (see, e.g. Tr. v. 1:170; v. 37:5474; v. 38:5673; Ex. 8, p. 32). Third, no witness of either party was aware of an operating gold, silver, or platinum mine which mined material which could not be fire assayed, with the exception of one account of a small South African mine in a publication of unknown reliability (see, e.g., Tr. v. 5:171-72; v. 36:5430; v. 38:5677; Ex. SL-1).

The argument of Contestees that the Mijo claims contain a “new” type of mineral deposit which cannot be reliably assessed by standard fire assay techniques is premised upon the work of Dr. Ager and Dr. Smith regarding the mineralogical structure and composition of material from the southern Eldorado Valley and the Mijo claims. In approximately 1998 Dr. Smith, as a consulting geologist for Cactus Mining, began working with Dr. Ager on a geologic and

metallurgical study focusing primarily upon the southern Eldorado Valley (Tr. v. 2:508, 512, 544).

They concluded that that area contains a very unique type of gold and platinum group element mineralization which was concentrated from its source (a Precambrian geological terrain known as the Mohave Province) through a series of intrusive and hydrothermal geological events and subsequent erosion into the alluvial cover within the valley (Tr. v. 2:514-25, 539-40, 607-13). According to them, the alleged mineralization is unlike any other precious metal deposit because it is basic, sulfide deficient, and nonsilica or nonsilicious, whereas the typical deposit is acidic, sulfide, and silicious (Tr. v. 2:528-30; v. 17:3020; v. 18:3176-80; v. 19:3289-90, 3298-99).

Drs. Ager and Smith further testified that the origins, geology, mineralogical structure and composition, and response to metallurgical processes of the material from the Mijo claims is the same or nearly the same as that of the southern Eldorado Valley material (see, e.g., Tr. v. 2:525, 534; v. 17:3004, 3013-14; v. 18:3132-33, 3169-70, 3197-98, 3208; v. 19:3369-70; v. 20:3511-12). Another similarity is that the southern valley includes jasperoid, hematitic, north-south trending bodies which are purportedly gold-bearing and which are similar to such bodies lying ½ mile north of the Mijo claims (Tr. v. 2:502-08, 519-20, 549, 601-02).

Dr. Smith hypothesized that those jasperoid bodies may extend under the alluvial cover of the Mijo claims (Tr. v. 2:550). However, Mr. Clay did not observe any jasperoid bodies on the Mijo claims during the validity examination (Tr. v. 35:5214-15) and Contestees failed to prove Dr. Smith's hypothesis.

Further, four samples taken by Dr. Smith from the jasperoid bodies north of the Mijo claims did not contain high gold values (Tr. v. 2:503-05, 548-52, 555). The assay results from Jacobs Lab showed three samples containing insignificant amounts of gold and one sample bearing gold of 0.19 oz./ton. (id.:505, 551-52, 555).

In reality, the geologic environment on the Mijo claims is not favorable for the formation of a precious metals deposit, especially one containing PGM's (see, e.g., Ex. 2, pp. 4-6). PGM's are nearly always found in direct association with mafic or ultramafic intrusive rocks (Ex. 2, p. 4; Tr. v. 35:5216-17; v. 36:5406-07, 5410-11; v. 37:5554; see also Tr. v. 18:3243-49). They have been found elsewhere (Tr. v. 18:3248-49), including in association with black shale and with shear zones in limestone at the Boss Mine which is 30 miles to the southwest of the Mijo claims (Ex. 2, pp. 4-5; Tr. v. 37:5572). None of these geological environments are present on the Mijo claims, where the igneous rock is felsic, and PGM's are not normally associated with felsic rock (Ex. 2, pp. 4-6; Tr. v. 18:3243-49).

Drs. Ager and Smith testified that they used proprietary electron microscopy techniques and auger analysis to determine the constituents of the "hydrothermal mineral assemblage" (HMA) in which the precious metals are found and the colloidal size of the precious metal particles, which are between five nanometers (nm) and one micron in size (Tr. v. 2:522-24, 527,

557, 559-61; v. 17:3005-06, 3031; v. 18:3196-97; v. 19:3438-39, 3441-42; v. 20:3498-99). Dr. Smith identified the four principal constituents to be quartz, albite, feldspar, and chlorate (Tr. v. 3:583). The other major constituents identified were smectite, illite, zeolite, clinoptilite, hewettite, and chlorite (id.:583-84). The listing of minor constituents included chlorite, lead, hematite, and montebrasite (id.).

They stated that the material is very difficult to fire assay or that “no fire assay is any good on the Eldorado ore” because the precious metal particles are coated and housed in materials which are refractory, which they defined as nonresponsive to thermal or chemical treatment (see, e.g., Tr. v. 2:534-37, 539; v. 3:583, 604-05; v. 17:3005, 3007, 3020-28, 3031; v. 18:3188, 3199-02). The identity and nature of these refractory materials and the precise methods of their detection are unclear because the descriptions thereof were either or both confusing and incomplete, as Dr. Ager refused to provide additional information, claiming that it is proprietary (see, e.g., Tr. v. 19:3437-42; v. 20:3499, 3505-06).

Reportedly, the precious metal particles are generally covered in two coatings, the inner layer being rich in calcium and iron and the outside layer being rich in aluminum and silica (Tr. v. 2:536; v. 3:605). One of the coatings, seemingly the outer one, allegedly has a melting temperature of 1500° C or 2,732° F, which is higher than that reached during a fire assay (Tr. v. 3:587-90, 605; v. 17:3005; v. 18:3201-02; v. 19:3443). The melting temperature was reportedly determined by submitting the chemical composition of the coating to Corning Glass (Tr. v. 2:536; v. 3:587-90; v. 19:3442).

Further, the particles are reportedly “housed” in a setting rich in fine clay minerals, including specularite, illite, and smectite (Tr. v. 2:536, v. 3:582, 605). Dr. Ager mentioned the presence of calcium carbonate, iron oxides, and selenium oxides as well (Tr. 17:3031). Dr. Ager asserted that the clays are also refractory, melting at a temperature of 1,100 - 1,300° C, above the fusion temperature in a fire assay, and that the clays can either swell up with water or become too dry, further interfering with or preventing the fusion required for fire assay (Tr. v. 17:3030-34, 3038, 3090, 3164-68; v. 18:3088-90; v. 19:3304-05; see also Tr. v. 14:2327-28; v. 16:2816 (Matheson similarly testifying)).

Relying on Stoke’s law, which is a formula expressing the rates of settling of spherical particles in a fluid based upon the radius of the particle, the densities of the particle and liquid, and the coefficient of viscosity (Bureau of Mines, A Dictionary of Mining, Mineral, and Related Terms 1079, (P. Thrush, ed., 1968)), Dr. Ager also viewed the small size of the precious metal particles as problematic (see, e.g., Tr. v. 17:3039-42; v. 19:3273-81; v. 20:3501-02). He testified that the particles will remain in the slag and not drop through it to collect with the lead at the bottom of the crucible unless the particles aggregate with each other or the lead to a size of 20-40 microns (Tr. v. 17:3039-42; v. 19:3273-81).

The coatings and clay minerals come into play because they allegedly prevent or inhibit aggregation (see, e.g., Tr. v. 19:3285). According to Dr. Ager, aggregation is also important because if the particles are less than 10 microns in size, they can pass into the cupel through its

pores or be off-gased as vapor (Tr. v. 17:3024-25; v. 19:3281-83).

The testimony of Drs. Ager and Smith suffers from at least three deficiencies: first, Dr. Ager's credibility is suspect (as discussed earlier) and Dr. Smith worked under his direction; second, to the extent they divulged information to support their theories, they were refuted by testimony from Contestant's expert witnesses; and, third, to the extent that neither of them would divulge such information, claiming that the information is proprietary,⁶ they have not shown a scientific basis for their theories and therefore they cannot be given substantial probative weight.

Their testimony was supported by the testimony of Dr. William J. Guay, who is a well-qualified metallurgist with a good reputation (Ex. SL-A; Tr. v. 5:1-10; v. 39:5920-21, 5924). He has been "largely retired" since 1985 but does "some consulting work from time to time." (Tr. v. 5:8; v. 22:2677). Dr. Guay was first a Senior Metallurgist and then the Chief Metallurgist for Newmont Exploration at its mine in Carlin, Nevada, from 1966 to 1983 (Ex. SL-A). He also taught fire assaying at the Colorado School of Mines for some unknown duration on unspecified dates (Ex. SL-A). Despite his good reputation and credentials, there are reasons to discount Dr. Guay's testimony.

First, Dr. Guay has "hardly ever done [assaying] in [his] whole life", had never personally conducted any assays at Newmont, and does not appear to be an expert in instrumental methods of assay (see, e.g., Ex. SL-A; Tr. v. 5:45, 168; v. 37:5522-23; v. 39:5934-36). This is evidenced, in part, by his distrust of instrumental methods of assay, despite the general understanding in the mining community that they detect gold at least as well as a fire assay (Tr. v. 37:5534, 5579-82, 5585-86) and his own admission that "I don't have any evidence that [they are] bad." (Tr. v. 5:191)⁷

Dr. Guay's consulting work has included sampling and testing at the Josh pit for Mr. Roe in 1993 and more recent consulting for Dr. Ager at Cactus Mining (Tr. v. 5:28-29, 32-33, 167; Ex. A-192). Without remuneration (except a small \$100 payment), he testified at the hearing and has been reviewing information regarding the Eldorado Valley material provided to him by Mr. Matheson since 1997, when Messrs. Roe and Matheson contacted Dr. Guay to discuss the Delgratia debacle (Tr. v. 5:167; v. 22:2676-78; Exs. A-192, SL-A).

⁶Contestant attempted to accommodate Dr. Ager's alleged need to keep the purported scientific data confidential by offering to enter into a confidentiality agreement. However, negotiations over the scope of the agreement were unsuccessful. Both Mr. Matheson and Dr. Ager claimed during the hearing that Contestant refused to enter into a confidentiality agreement, but this is refuted by the record (Ex. 52; Tr. v. 20:3510; v. 38:5755-58). In fact, BLM made the last counteroffer, and Dr. Ager never responded (Tr. v. 38:5758).

⁷Dr. Guay also acknowledged that he has not kept abreast of the literature for the last 10 years (Tr. v. 5:47).

He concluded that “all the evidence I’ve seen suggests that” a fire assay could completely fail to detect commercial quality ore on the Mijo claims (Tr. v. 5:170). In so doing, he gives short shrift to the content of the mineral examiners’ report, including the consistent reporting of no anomalous gold by several laboratories using a variety of assay methods (see, e.g., Tr. v. 5:270). Moreover, he later acknowledged that “[a]ll these things have to be proven and I don’t deny that for one second” (id.:274).

Further, Dr. Guay’s testimony is based largely on information imparted to him by Dr. Ager and Mr. Matheson and very little other data or credible literature (see, e.g., Tr. v. 5:208-10, 261-72; see also Tr. v. 5:150 (stating that, with respect to his conclusion that “new type of deposit” exists, “a lot of this is based on the work of Dr. Ager [T]he proof of that rests with his . . . work”); v. 5:208 (“The only thing I know about Mr. Matheson’s claims is what I read in his literature. . . . I don’t know anything about the Mijo except what I read.”)). He seemed to accept much of that information at face value (Tr. v. 5:261-72, 279-80) and often deferred to Dr. Ager to answer questions posed at the hearing.

Indeed, when questioned about Dr. Ager’s theory that special care must be taken in drying the Eldorado Valley material so that the clays do not contain moisture which will interfere with detection of the precious metals by fire assay, Dr. Guay stated, “I have to [believe him].” (Tr. v. 5:279-80). Dr. Guay supported the validity of that theory (Tr. v. 5:100-02, 104-05, 279-80), but, as explained below, it lacks a scientific basis.

Contestant’s experts, in addition to the mineral examiners, are Messrs. Mark Lewis and Ed Jucevic and Drs. Paul Lechler, Ralph Pray, Corby Anderson, and Vernon Griffiths, who all are well-qualified (Tr. v. 2:387, 396-97, 432-33, 441; Ex. 11 (Lewis); Tr. v. 37:5446-53; Ex. 36 (Lechler); Tr. v. 38:5632-39; Ex. 38 (Griffiths); Tr. v. 38:5661-65; Ex. 40 (Anderson); Tr. v. 39:5898-5900, 5918-19, 5936; Ex. 65 (Pray); Tr. v. 40:6062-65; Ex. 71 (Jucevic). The allegations regarding the super-refractory coatings were directly rebutted by Contestant’s experts.

Dr. Griffiths, serving as a consultant for CAMP, analyzed Mijo samples by X-ray diffraction (XRD) and scanning electron microscopy/energy dispersive x-ray spectrometry (SEM/EDX) (Tr. v. 38:5634, 5640-42). He found no evidence of the coatings that Drs. Ager and Smith claim cover the alleged precious metal particles in the Eldorado Valley (Tr. v. 38:5647).

Using SEM, he examined cross-sections of particles down to a half micron in size taken from the Mijo samples and did not perceive a coating structure nor all of the same constituents that Drs. Ager and Smith contended comprise the coatings (Tr. v. 38:5642-43, 5645-47). His testimony in this regard is entitled to greater weight because he has more specialized experience in the use of such equipment than do Drs. Ager and Smith and because Dr. Ager’s credibility is suspect.

After being asked to assume that the coatings exist and that their composition and

structure were accurately described by Drs. Ager and Smith, Contestant's experts refuted the various assertions of Contestees' witnesses as to why a fire assay could not reliably detect precious metals in the Mijo material (see, e.g., Tr. v. 37:5474-83, 5526-29; v. 38:5676-78; v. 39:5905-07, 5910). Dr. Pray noted that the Mijo material also contained ilmenite, which is refractory (Tr. v. 39:5941-42), but that ilmenite can be digested in a fire assay (Tr. v. 36:5291-92, 5448; v. 37:5469, 5524-25).

In response to Dr. Ager's observations that the melting temperature of the outer coating (1,500° C) and clay minerals (1,100 to 1,300° C) is higher than the standard fire assay temperature, Dr. Lechler testified that the melting temperature of the constituents of a material is not critical as to whether a fire assay will reliably detect precious metals within the material (Tr. v. 37:5477-78). Rather, it is the flux that must melt in order to *corrode* – not melt – the precious metal particles and therefore allow the lead collector to “catch” or fuse with the precious metals (Tr. v. 15:281-82; v. 35:5201; v. 36:5440-41; v. 37:5477; v. 38:5674; Ex. 8, p. 32; Ex. 41, p. 25).

If there is a highly refractory material in the sample, a competent assayer will be able to detect it by observing irregularities in the process and then modify the composition of the flux to make it sufficiently corrosive to dissolve the refractory substance (Tr. v. 2:433-34; v. 35:5159-61; v. 36:5305-06; 5341-42; v. 37:5467-69, 5553-55; v. 38:5668, 5670-71; Ex. 8, p. 32). This is standard industry practice (Tr. v. 37:5469; v. 38:5670).

Thus, one of the most refractory substances known, chromite, may be successfully dissolved by modifying the flux (Ex. 41, pp. 31-32; Tr. v. 37:5469-70). Most, if not all, of the substances purportedly coating Eldorado Valley material are less refractory than chromite (see, e.g., Tr. v. 37:5469 (Lechler testifying that chromite is probably more refractory than ilmenite and that smectite and illite are not particularly refractory); see also Tr. v. 36:5259; v. 37:5528-31 (clays not difficult to dissolve)). Further, quartz, which has a melting point (1,600 C) higher than that of the constituents of the Mijo material, is successfully digested by fire assay on a regular basis (Tr. v. 37:5477).

Contestees' witnesses also testified as to the importance of testing fresh samples, asserting that the material is time sensitive so that assaying (by various methods) will detect less or no value if the excavated material is first exposed to the atmosphere for a substantial period of time (see, e.g., Tr. v. 14:112-13, 126-27; v. 15:196-97; v. 26:3505; v. 32:4477-91, 4536-42). However, their statements do not withstand scrutiny because they lack consistency and a scientific basis.

Their statements varied not only with regard to the explanations for this purported phenomenon (see generally Tr. v. 32:4477-91; v. 39:5852-56, 5885), but also as to the existence of the phenomenon. Mr. Matheson testified, without supporting scientific analysis, that concentrating a sample and then leaching it eliminated the time sensitivity problem so that only head ore samples were time sensitive (Tr. v. 22:2671-72; v. 27:3718-19; v. 31:4342-43; v. 32:4477-79, 4490-91, 4536-39, 4544-45). Mr. Phebus stated that fresh samples were not

needed to assay by scorification (Tr. v. 34:5071-72), and Mr. Henderson did not observe any time sensitivity problem whatsoever (Tr. v. 3:705, 707-08; see also Tr. v. 2:409-10). In fact, Mr. Matheson repeatedly testified that “time sensitivity” is a misnomer (Tr. v. 32:4477, 4480-81, 4485).

He and Dr. Ager explained that the method of drying of a sample is critical because of the moisture that the clay constituents absorb, retain, or lose over time and when processed (see, e.g., Tr. v. 13:2327-28; v. 17:3030-38, 3087-90, 3164-68; v. 19:3304-05; Tr. v. 32:4477-91). With regard to the alleged problems associated with the clay, Mr. Matheson acknowledged that he did not know what happened or why but was merely relating Dr. Ager’s theories (Tr. v. 33:4666-69).

In Dr. Ager’s words, if the material is exposed to the atmosphere so that it “arbitrarily dries”, then the material “self-precipitates its mineral grains, which plug the pores in the [material] and prevent further loss of water * * *, even when you put it into a drying oven. * * * It’s important because when you go to grind it, you’re trying to grind plasticine, [so] you can’t shear it or grind it.” (Tr. v. 17:3032) The plasticine clays must then be “slagged off during fusion to expose the gold” (id.), which purportedly is problematic because their melting point is 1,100 to 1,300° C, as previously mentioned. Contestees’ witnesses also testified that the absorption or retention of moisture in the clays can lead to “off-gasing” which will either substantially retard the fusion or cause a pressure buildup that forces the lead collector to drop prematurely (Tr. v. 5:51-52, 100-06, 284-88; v. 13:2327-28; v. 17:3030-38, 3087-90, 3164-68; v. 19:3304-05). There is no scientific basis for these explanations because, among other reasons, the amount of water is insignificant, any interstitial or hydroxyl water will be released by the time the fusion reaches 900° C, and any clay coating will dissolve in a standard fire assay (Tr. v. 12:2026, 2080; v. 35:5251; v. 36:5259; v. 37:5451-52, 5469, 5480-82, 5528-31; v. 39:5943, 5950).

Relatedly, Messrs. Matheson and Phebus testified that assay results varied by the furnace used and that better results were achieved using a furnace that was vented to release the pressure buildup and allow oxygen to enter (Tr. v. 7:1089; 13:2328-29, 2333-39; v. 14:142; v. 16:2817-22; v. 26:3447-48). However, Mr. Henderson testified that he has not “seen any difference over the years” with respect to using different furnaces (Tr. v. 3:698-700).

Dr. Guay also observed that better assay values were reported in oxidizing environments attributable to the use of scorification, a vented furnace, or nitre as an oxidizing agent (Tr. v. 5:231-34, 273-74). He recommended investigating the potential beneficial effects of an oxidizing atmosphere as something “a little more than” a hypothesis, “but maybe not much more than that.” (Tr. v. 5:234).

Mr. Lewis confirmed that nitre is a strong oxidizing agent, but noted that it is typically used for sulfide ores, that the Mijo material is not sulfide, and that he could not conceive of nitre increasing greatly the precious metal values detected therein (Tr. v. 2:453, 464, 471-72). He also detected no anomalous levels of precious metals applying Mr. Henderson’s scorification

technique, including venting the furnace, to Mijo samples provided by BLM to Legends (Tr. v. 2:406-08, 416-19). Consistent therewith, Dr. Pray testified that he had conducted studies of the effects of using different types of furnaces and different levels of oxygen and found no differences in the assay results for gold and silver (Tr. v. 39:5909-11).

Mr. Phebus also testified that time sensitivity related to oxidation of the excavated material, but he provided no explanation as to why oxidation would adversely affect a fire assay (Tr. v. 6:966-68; v. 7:1093-94). Messrs. Clay and Schumaker both testified that Mr. Phebus' testimony is based upon the false premise that the material was not already oxidized before excavation, as it sits above the water table (Tr. v. 1:166; v. 36:5313-14). Further, several of the samples assayed at BLM's request were sealed in nitrogen to avoid oxidation and no anomalous precious metal values were detected (Tr. v. 1:32-26; v. 36:5313-14).

Contestees' assertion that the particles are so small they will not drop through the slag, will pass into the cupel, or otherwise go undetected was also refuted by Contestant's experts (Tr. v. 15:282-83; v. 37:5472-74, 5479, 5482-83; v. 38:5672; v. 39:5448). Dr. Lechler explained that he had performed quality assurance tests where he spiked blank samples with precious metals in the subnanometer size, much smaller than the purported size of the Eldorado Valley particles (Tr. v. 37:5473, 5581). The precious metals nonetheless still reported to the top of the cupel, "[s]o particle size is not an issue." (*Id.*:5474; see also Tr. v. 38:5674-75 (Anderson testifying that Contestees' theory of loss to the cupel "is nonsense"). Dr. Anderson testified that, according to fundamental metallurgical principles, micron-size particles would actually be more likely to be corroded than larger particles during the fusion stage of a fire assay, and thus more likely to be caught by the lead collector and report to the button on top of the cupel (Tr. v. 38:5672; see also Tr. v. 37:5482-83, 5486; Ex. 8, p. 34).

Contestant's experts further refuted Contestees' assertions that scorification, the so-called "Belgian" assay technique, the "repetitive slag fire assay" method, and the "Slagmaster" technique are more reliable than a standard fire assay on Eldorado Valley material, even assuming the composition and size of the material described by Drs. Ager and Smith (see, e.g., Tr. v. 2:421, 441; v. 15:286-87; v. 35:5159-64; v. 36:5352-54; v. 37:5461, 5458-60, 5483-88, 5580-81; v. 38:5709-12, 5718, 5723-24; v. 40:6109-12). Dr. Lechler pointed out that the "Belgian" assay technique and scorification are "two end members of the fire assay procedure," with "[o]ne using a very large amount of flux" and the other "using a very, very small amount of flux." (Tr. v. 37:5485) He explained that, "what that should tell you if they both work," as Contestees assert, "almost any fire assay would work," and that "the standard fire assay would fall in between somewhere." (*Id.*)

Further, numerous witnesses, including Dr. Guay, testified that scorification is not commonly used and is less accurate and precise than a standard fire assay because of the large amount of lead in relation to the small sample size (2 grams) (Tr. v. 2:474-75; v. 5:273-74; v. 35:5134, 5144-45, 5156-57; v. 36, 5323-32; v. 37:5565-66; v. 38:5718-20). Moreover, as previously mentioned, Mr. Lewis employed Mr. Henderson's scorification technique on Mijo samples and found no anomalous levels of precious metals.

Likewise, repetitive assaying of the slags and/or cupels is a rarely used and inferior process, but for a different reason: precious metals can exist as impurities in the reagents (inquant and litharge) that may accumulate into measurable gold (Tr. v. 15:250, 286-87; v. 35:5162-63; v. 36:5352-55; v. 37:5461, 5487; v. 40:6110-11). Dr. Lechler also reassayed the slags from Mijo samples which he processed at Mr. Matheson's request in 1997 and found no anomalous levels of precious metals (Tr. v. 37:5458-60, 5580-81).⁸ Another reason repetitive fusions are rarely used is that they are unnecessary.

Contestant's experts uniformly concluded that, in a competently performed fire assay, it is impossible for significant amounts of precious metals to report to the slag or cupel (Tr. v. 1:170; v. 2:425-27; v. 35:5159-61, 5257; v. 37:5471-73, 5520; v. 38:5671, 5673, 5675; v. 39:5863; see also Tr. v. 5:223-24 (Guay admitting that there is no support in the literature for the proposition that all precious metal can go into the slag and cupel)). Any losses of precious metals to the slag or cupel might be of concern only in a close case, where the assay values approach economic levels (Tr. v. 36:5290).

Their conclusion is based not only on extensive experience, but also empirical studies, experimentation, and peer-reviewed literature. For example, Dr. Lechler's conclusion is based on experiments that "checked fire assay analytical results with other methodologies," such as atomic absorption and ICP-MS (inductively coupled plasma-mass spectrometry), and on having participated "in round robin assay comparisons with other laboratories." (Tr. v. 37:5471-72, 5520) Mr. Lewis' conclusion is based on 22 years of assaying experience and studies performed by Legend to determine losses to the slag and cupel (Tr. v. 2:425-27). Dr. Anderson testified that "there's a whole body" of scientific or peer-reviewed literature supporting the reliability of fire assay (Tr. v. 38:5709; see also Ex. 8).

The IBLA confronted a similar situation in United States v. Ramsey, 14 IBLA 152 (1974), appeal dismissed sub nom. Ramsey v. Morton, Civ. No. 74-192 (D. Or. May 1, 1975), aff'd, Civ. No. 75-2782 (9th Cir. Mar. 22, 1977). In Ramsey, the mining claimant relied on reports from "non-standard" assay techniques showing values in splits of samples that the fire assay method did not detect. Id. at 156. The IBLA observed:

In an apparent explanation of the disparity of results between their fire assays and their non-standard assays, appellants' expert witnesses stated that the gold was "clear down in the atoms" of the associated material. * * * While we do not categorically assert that such pre-Agricolian notions of metallurgy are totally invalid, neither do we believe that such evidence is entitled to probative weight without a showing of its scientific basis.

⁸Mr. Henderson told Mr. Lewis that reassaying the slag and cupel is not necessary (Tr. v. 2:409).

Id.

In the present case, the incomplete explanations of Drs. Ager and Smith do not establish an adequate scientific basis for the opinion of Contestees' witnesses that the material cannot be reliably assayed by standard fire assay, especially given the unrebutted refutations of their testimony by Contestant's experts. Consequently, that opinion is not entitled to substantial weight and must be rejected. See id.; see also Schlosser v. Pierce, 92 IBLA 109, 150 (1986) ("Where a party is reluctant to introduce purported evidence into the record to clarify crucial elements in his position, the probative value of the evidence is greatly diminished"), citing United States v. Chapman, 87 IBLA 216, 221 (1985).

In sum, the overwhelming weight of the evidence compels the conclusion that a standard fire assay will reliably assay Mijo material. Consequently, Contestees' allegations that the fire assay is unreliable must be rejected as unproven, and the consistent fire assay results presented above, all from reputable and well-qualified labs, are entitled to full weight.

b.

Inductively Coupled Plasma Analysis Shows The Absence Of Valuable Minerals

NBMG analyzed Mijo samples using ICP-MS with microwave digestion (Tr. v. 1:39; v. 37:5491). Dr. Lechler explained that this technique involves essentially two steps: (1) complete digestion or dissolution of the sample in acid at high temperature and pressure and (2) instrumental analysis and detection of individual ions (Tr. v. 37:5492). NBMG conducted the analysis on splits of all the samples taken during the mineral examination (Tr. v. 40:5667-69; v. 37:5491, 5493-94). The ICP-MS analysis showed that the Mijo samples did not contain precious metals above average crustal abundance (Exs. 4, 5; Tr. v. 1:170-172, 174-75) and confirmed the fire assay results of Legend, Bondar-Clegg, and Chemex (Tr. v. 1:171; Tr. v. 2:39-40; 15:289-92).⁹

The ICP-MS results show that the Mijo material does not contain precious metals above average crustal abundance. In ICP-MS, the entire sample is digested so that the precious metals cannot go undetected (Tr. v. 1:175; v. 15:289-92; v. 37:5492, 5496). Any precious metals that might be lost to the slag or cupel in a fire assay would be detected (Tr. v. 1:171, 174-75).

Dr. Ager set forth reasons why ICP analysis might not detect the precious metals in Mijo material (Tr. v. 18:3099-3109), but Dr. Lechler explained why this reasoning does not withstand scrutiny (Tr. v. 37:5494-96; see also Ex. 10, p. 5 (stating that ICP-MS "will in general be free of

⁹Dr. Lechler testified that if splits of a sample are competently analyzed in separate labs using fire assay, ICP-MS, and neutron activation, he would expect the results to be closely similar, which has been "observed in many instances." (Tr. v. 37:5496-97)

any interferences’’).

CAMP also analyzed Mijo samples using ICP analysis, but with atomic emission spectroscopy rather than mass spectrometry (Tr. v. 38:5685-87). The procedure CAMP used and its results are shown in Exhibit 39 at pages 3, 4-5, 7-8 and in Appendix VII.

No gold and silver above average crustal abundance were found. In addition, based on the fire assay, ICP analysis, and other analyses that CAMP performed on the Mijo samples, Dr. Anderson, who prepared the ICP samples and coordinated the rest of the work, testified that he did not see any evidence of precious metals in the Mijo samples above average crustal abundance (Tr. v. 38:5685-86; see also Ex. 39, pp. 2, 8).

c.

Neutron Activation Analysis Shows The Absence Of Valuable Minerals

Samples from the Mijo claims were also subjected to neutron activation (NA) analysis by Chemex (Tr. v. 40:5969). NA analysis involves evaluating the gamma ray radiation emitted by a sample subjected to neutron radiation (Tr. v. 18:3111-12; v. 40:5972-73). There are two types of NA analysis, epithermal and thermal, and it is unclear which type was used by Chemex (Tr. v. 40:5972).

All the Chemex samples showed insignificant quantities of gold (less than five parts per billion) (Ex. 67, p. 2). Several big mining companies being courted by Mr. Matheson also subjected Mijo material to NA analysis and reported no anomalous gold values (Tr. v. 14:49-50).

While acting as Contestees’ representative, rather than as a witness, Mr. Matheson stated that Contestees had done a “study” on NA and discovered that only one of the two NA methods worked on the Mijo material (Tr. v. 40:5973-74). He further represented that “Dr. Ager [then] did some work and found out that the rare earths [in the Mijo material] were absorbing gamma rays * * *.” (Tr. v. 40:5974).

According to Mr. Matheson, the alleged “study” consisted of only two Mijo samples being sent to Neutron Activation Services in Ann Arbor, Michigan for NA analysis in reaction to the zero-value NA results of the big mining companies (Tr. v. 14:50-52). Furthermore, Dr. Ager testified that he had never tried NA on the Eldorado ore (Tr. v. 18:3109-10).

Mr. Matheson stated that a representative of Neutron Activation Services told him that one sample was subjected to epithermal NA analysis and one to thermal NA analysis, that only the thermal analysis detected gold, and that the epithermal method does not appear to work on the Mijo material but that the thermal method does work (Tr. v. 14:52-53). Dr. Ager similarly testified that the thermal method is preferred (Tr. v. 18:3116).

He also opined that NA analysis may underestimate the amount of gold for various

reasons (Tr. v. 18:3110-18). He testified that NA analysis may undervalue the Mijo material because the gamma rays emitted by the gold may be absorbed by the coating on the gold or by heavy rare earth elements in the material (id.). However, as previously stated, he had not conducted any NA analyses on Eldorado Valley material (Tr. v. 18:3109-10, 3116-17).

Dr. Lechler refuted Mr. Matheson's contention that only one method of NA (thermal) works on Mijo material (Tr. v. 37:5489). He testified that, while there may be differences between the two types of NA for certain types of samples, given the Contestees' contentions regarding the concentration, size, and chemical composition of the alleged precious metal particles, he could conceive of no "particular problem" regardless of which form of NA was used (Tr. v. 37:5489-90).

Dr. Lechler also rebutted Dr. Ager's theories as to why NA might undervalue samples, stating that Dr. Ager was "hypothesizing" with no scientific data to support his contention (Tr. v. 37:5490-91). Dr. Lechler concluded that "the vast majority of people in the mining industry highly respect neutron activation as a method that reliably detects small amounts of precious metals" and that "[i]t's generally understood within the mining community that neutron activation[, in comparison to other analytical techniques,] generally returns the highest value * * * in an analytical sample because it's a very total analysis." (Tr. v. 37:5490-91, 5581-82)

Likewise, Mr. Clay testified that it would not matter which method of NA was used (Tr. v. 40:5972). He characterized the theory that the gamma rays would be absorbed by the gold's coating or heavy rare earth materials as pseudoscientific technobabble, explaining that gamma rays will penetrate several feet of concrete without slowing down and that the "thought that you can use a micro-thin coating of anything to stop gamma radiation is simply ridiculous (Tr. v. 40:5974-75).

Dr. Guay testified the small size of the sample (two grams) used for instrumentation analyses is problematic (Tr. v. 5:190). He did not specifically identify which analyses use a small sample size. A published article on assaying confirms that the smallness of the maximum sample size (two to three grams) for neutron activation spectroscopy can preclude accuracy where the sample has not been preconcentrated and there is inhomogeneity in the noble metal distribution (Ex. 8, p. 34). However, that article also states that "micrometre-sized gold, such as that allegedly present on the Mijo claims, should result in the most reproducible assays from all assay techniques." (Id.)

In sum, the weight of evidence shows that the NA analyses of the Mijo samples are reliable and reasonably accurate.

d.

Thiourea Leach Tests Show The Absence Of Valuable Minerals

Thiourea leach testing by Dr. Pray of samples from the Mijo 16/17 corner also detected

no gold and silver above average crustal abundance (Exs. 43, 45; Tr. 38:5732-39; Tr. v. 39:5904, 5909). That testing included following Mr. White's description of his thiourea leach process which Mr. Matheson provided to BLM (Exs. 44, 45; Tr. v. 38:5732-39; v. 39:5907-08), and which purportedly has been used to detect substantial gold values in the Mijo material and is proprietary.

Because Mr. White neglected to include an oxidizing reagent in the description, Mr. Pray did not use one when following the description (Tr. v. 38:5732-39; v. 39:5908-09). Subsequently, Mr. Matheson informed BLM that Mr. White's process did include either ferric chloride or hydrogen peroxide as an oxidizer and that it would not work without an oxidizer (Ex. 53; Tr. v. 38:5732-39). Dr. Lechler confirmed that a thiourea leach without an oxidizer will lixiviate only a small portion of any gold present (Tr. v. 37:5940).

However, Mr. Pray also processed some of the samples using a normal thiourea leach with oxidizer and no anomalous gold was detected (Ex. 43; Tr. v. 38:5683-84). Further, Dr. Anderson opined that there was nothing in Mr. White's process to justify considering it to be proprietary (Tr. v. 38:5685). The only unusual aspect was the use of cream of tartar, which "would lend an air of amateurism to it." (Id.).

At times, Dr. Ager took the position that a thiourea leach process will detect/extract gold from Eldorado Valley material only if certain procedures are followed (see, e.g., Tr. v. 18:3163-68). He opined that the methods by which a sample was dried and grinded were critical and that he found through testing, "for reasons not completely clear still," if you avoided those two steps, no gold could be detected (id.)

However, when he was asked "what must [Mr. Gunnison] do for the leach to work on Eldorado Valley material", he responded, "Well, there's a number of ways you could make it work." (Tr. v. 18:3367). He then stated that many different sizes of grind work, with 200 to 300 mesh being the preferred range, and that Mr. Gunnison produced gold beads using different grinds (Tr. v. 18:3367-71, 3382). Mr. Phebus also reported gold values using different size grinds (Tr. v. 7:1051-53; v. 29:3918-22). In the end, Dr. Ager would only describe Mr. Gunnison's process in general terms because he identified the whole process as being proprietary, whereas Mr. Matheson said only the stabilizing chemical was proprietary (Tr. v. 15:164; v. 19:3370-73, 3377-90, 3400-04).

Ultimately, the record shows that a normal thiourea leach will work on the Mijo material. Dr. Pray so testified after consideration of the makeup of the Mijo material, as identified by Drs. Ager and Smith (Tr. v. 39:5905-07). Contestees' own witness, Mr. Phebus, testified that a "standard thiourea leach" works on Mijo material (Tr. v. 6:993; v. 7:1050-51).¹⁰ Thus,

¹⁰Mr. Phebus further testified that a thiourea leach would work by grinding the material to a minus 100 mesh (Tr. v. 7:1051-53). Dr. Pray, in performing his thiourea leach test, ground the samples to ten microns (Ex. 43), which is much smaller.

Dr. Pray's results are considered reliable.

e.

X-ray Diffraction, Scanning Electron Microscopy (SEM)/Energy Dispersive X-ray Spectrometry, And Ocular SEM Analysis Show The Absence Of Valuable Minerals

Dr. Griffiths, serving as a consultant for CAMP, analyzed Mijo samples by X-ray diffraction (XRD) and scanning electron microscopy/energy dispersive x-ray spectrometry (SEM/EDX) (Tr. v. 38:5634, 5640-42). He detected no evidence of gold or other precious metals in the portions of the Mijo samples he analyzed and was confident in his analyses and conclusions (Tr. v. 38:5646; Ex. 39, pp. 3, 8).

Nor did Dr. Griffiths find evidence of the coatings that Drs. Ager and Smith claim cover the alleged precious metal particles in the Eldorado Valley (Tr. v. 38:5647). Using SEM, he examined cross-sections of particles down to a half micron in size taken from the Mijo samples and did not perceive a coating structure nor all of the same constituents that Drs. Ager and Smith contended comprise the coatings (Tr. v. 38:5642-43, 5645-47). His testimony in this regard is entitled to greater weight because he has more specialized experience in the use of such equipment than do Drs. Ager and Smith and because Dr. Ager's credibility is suspect.

2.

Contestees' Samplings And Analytical Results

a.

General Observations And Applicable Law

In contrast to Contestant's evidence of mineralization or lack thereof, Contestees' evidence of mineralization is generally unreliable and not substantially probative for a number of reasons. Consequently, the weight of the evidence shows that the Mijo claims do not contain precious metals above average crustal abundance and, therefore, that the claims are invalid for lack of discovery.

Contestees' mineralization evidence is unreliable and lacking in probative weight because of (1) the lack of information regarding sample locations, weights, and methods, (2) their assayers' dishonesty, poor reputations, and/or demonstrated sloppiness or incompetency analyzing standards, blanks, and other samples, (3) their reliance on assay techniques - many proprietary and/or unconventional in nature - which are unproven, unreliable, and/or not adequately described, (4) the poor or questionable credibility of many of Contestees' pertinent witnesses, (5) notable inconsistencies between some of Contestees' witnesses, (6) the failure to show that the evidence pertains to the Mijo claims as opposed to other claims in the Eldorado Valley, and (7) the wide variations in assay results for splits of the same samples.

That wide variation is undisputed (see, e.g., Tr. v. 8:1474-77; v. 11:1873-79, 1885-88; v. 14:45, 71; v. 15:242-43; v. 22:2539-40; v. 32:4626-28; v. 35:5130-31, 5203; v. 39:5860-61; Ex. A-130), but the parties differ as to the significance of that variation. Contestees contend that the variation evidences the difficulty of assaying the Mijo material by conventional methods and the differences in efficacy between the numerous assay methods which they tested. Contestant's experts convincingly countered that the material is not difficult to assay by conventional methods, as previously discussed, that those methods, if competently performed, should produce comparable results for splits of the same sample, and that the wide variation is indicative of problems with the splitting or assaying of the samples and renders the results unreliable (see, e.g., Tr. v. 11:1888, 1895; v. 12:2155-56; v. 15:242-43, 280-83, 287-88; v. 35:5187-90, 5203; v. 36:5276-79, 5437; v. 37:5496-97, 5581-82, 85-86; v. 38:5700-01; v. 39:5860-61).

Information regarding sampling is important because samples of mineralization must be representative of the mineral-bearing material which remains in the ground in order to be meaningful, see, e.g., United States v. Bechthold, 25 IBLA 77, 88 (1976); United States v. Parker, 82 IBLA 344, 91 I.D. 271, 278 (1984); United States v. Nicholson, 31 IBLA 224, 232-33 (1977); United States v. Crowley, 124 IBLA 374, 376-82 (1992), and not simply selective showings of the best mineralization. Bechthold, 25 IBLA at 88. "[H]igh assay reports alone are not evidence of a discovery. The nature of the samples yielding the high values must be considered and the evidence, taken as a whole, must suggest that the assay results are representative of mineralization on the claims." United States v. Lambeth, 37 IBLA 107, 114 (1978). Without information as to the size and nature of samples and the method by which they were taken, the samples cannot be determined to be representative and are thus entitled to little weight. See United States v. Guthrie, 5 IBLA 303, 308 (1972); United States v. Clifton, 14 IBLA 146, 151 (1974); United States v. Denham, 29 IBLA 185, 190 (1977).

Without sampling information, it is impossible to judge the extent and continuity of the mineralization or the quantity of ore of like quality. See Crowley, 124 IBLA at 380-82; United States v. Mavros, 122 IBLA 297, 306 (1992); Parker, 91 I.D. at 278. Such information as the distances between samples is necessary, among other reasons, to ascribe an area of influence for each sample, see United States v. Collord, 130 IBLA 266, 297 (1994), aff'd in relevant part, rev'd in part, Civ. No. 94-0432-S-EJL (D. Idaho Sept. 28, 1994), aff'd, 154 F.3d 933 (9th Cir. 1998), and to calculate the weighted average value of the samples.

The proper method of calculating the average grade (value) of the mineralization within a deposit is a weighted average. United States v. Franklin, 99 IBLA 120, 123 n.2 (1987). IBLA has refused to accept a numeric average as representative of the value of mineralization. Id.

Also, "[i]t is important that the 'custodial security' of samples taken from mining claims be maintained and, in the absence of assurances thereof in the record, the reliability of assay results is weakened." Crowley, 124 IBLA at 381; see also United States v. Connor, 139 IBLA 361, 372-73 (1997). Ultimately, the trier of fact is not required to believe or give probative weight to unreliable or inherently incredible evidence, United States v. Gillette, 104 IBLA 269, 275 (1988), and the probativeness and reliability of hearsay evidence such as assay reports

depends upon many factors, some of which are identified in R.C.T. Engineering Inc. v. OSMRE, 121 IBLA 142, 151-52 (1992). See also United States v. Jones, 2 IBLA 140, 145 (1971); United States v. Burt, 43 IBLA 363, 367-68 (1979).

Contestees' typical sampling method suffers from at least two deficiencies: they did not weigh the excavated material and some of it was spilled rather than captured when placing it into buckets. The typical method consisted of scraping off the top surface, digging down one to three feet with a shovel, sifting the removed material through a ¼-inch screen into a five-gallon bucket, and discarding the over-¼-inch material without weighing it (Tr. v. 27:3713-14; v. 28:3773, 3779-90; v. 30:4108-11, 124-26).

Mr. Matheson explained that they did not weigh the discarded material nor typically the ¼-inch-minus material because they discovered, by "test[ing] it numerous times," that the weight of the ¼-inch-minus material roughly equals the weight of the discarded material (Tr. v. 30:4110-11). However, if the minus-¼-inch fraction was concentrated by magnets, the typical procedure was to weigh that fraction in the bucket, dump it on the floor or plywood, separate the magnetics with a rake magnet, and then weigh the magnetic fraction (Tr. v. 27:3713-14; v. 28:3782; v. 33:4809-12). Mr. Matheson acknowledged that there was some spillage of the minus ¼-inch fraction as it was screened into the bucket, that the 1:1 ratio between the ¼-inch-minus material and the discarded material may vary by 15-20 percent, that the ratio will vary by location by an unknown amount, and that he had not weighed drill hole samples to see if the alleged ratio applied to material at depth (Tr. v. 30:4019; v. 32:4580-81; v. 33:4697-98).

Furthermore, the exact location of the vast majority of samples is unknown. For the alleged hundreds or thousands of assays of Mijo material conducted at Contestees' insider-funded labs (Mr. Vincent's lab or the Becki M millsite), Contestees generally failed to provide any specific information regarding sample locations, weights, or methods or assay results but, rather, simply provided estimated average assay results or no information whatsoever.

For assay results from outside labs, Mr. Matheson submitted Exhibit A-129, which purportedly contains sample and assay data for which the sample location and chain of custody are known for each sample (see, e.g., Tr. v. 2653-54, 2685). Nearly all the sample locations are depicted on maps which were prepared in late 2000, well after the samplings took place (Tr. v. 27:3558). Mr. Matheson testified that the maps only show an "estimate" or "rough location" of each sampling location (Tr. v. 27:3562).

The probative value of evidence of high grade samples is dependent on not only sample information, but also the assayer's reputation and qualifications and assay techniques, see, e.g., Gillette, 104 IBLA at 275, and whether supporting assay reports are adduced, see, e.g., United States v. Wells, 11 IBLA 253, 267 (1973). Results produced by unconventional methods or disreputable or unqualified assayers may be entitled to little or no weight. See Gillette, 104 IBLA at 275.

Drs. Anderson and Pray testified as to the importance of reputation in the mining industry

because fraud is prevalent and the risks are high (Tr. v. 38:5691-94; v. 39:5911-12, 5915). Dr. Anderson stated that it is not reasonable to rely on an assayer who has a poor reputation, who repeatedly cannot accurately assay blanks or standards, or who uses proprietary methods which are not proven to be technologically/scientifically sound and reproducible by competent assayers (Tr. v. 38:5693-94).

The assay data upon which Contestees rely to support their claim of discovery of a valuable mineral deposit is found mainly in five exhibits, Exhibit A-129, which is a loose-leaf notebook with 35 sets of assay data, Exhibit A-183, which was intended to “correct” page 1 of Exhibit A-129, and Exhibits A-158, A-159, and A-160 (incorrectly marked as Exhibits A-159, A-160, and A-161, respectively).¹¹ . The vast majority of this data was collected after June 6, 1994, the date the Mijo claims were segregated.

b.

The Import Of Segregation Of The Mijo Claims And Contestees’ Pre-segregation Evidence Of Mineralization

The date of segregation or withdrawal from mineral entry is typically critical because a mining claimant acquires rights which cannot be cancelled by the withdrawal only if the claim is perfected (including discovery) on the date of withdrawal. United States v. Mavros, 122 IBLA 297, 301-02 (1992). Furthermore, “[o]nce made, a discovery must be maintained. * * * [U]ntil a patent application has been perfected and the equitable title has vested, a claimant runs the risk of losing his discovery * * * if a material change in market conditions renders it unreasonable to expect that the mineral can be mined at a profit.” Id. Thus, there are two points in time at which a discovery must exist and present marketability is judged: the date of withdrawal and the date of the hearing, and no further exploration to physically expose valuable mineral of sufficient quality and quantity to constitute a discovery may be permitted after the date of withdrawal. Id.

However, sample data collected after the withdrawal date may be used to establish the existence of a valuable mineral deposit on that date. A distinction is properly drawn between discovery of a valuable mineral deposit and the samples taken to verify the value of the deposit. United States v. Waters, 146 IBLA 172, 182 (1998).

A necessary precondition to the discovery of a valuable mineral deposit is the exposure within the claim of the mineral deposit carrying the mineral values worth exploiting. See United States v. Feezor, 74 IBLA 56, 90 I.D. 262, 272 (1983); United States v. Gunsight Mining Company, 5 IBLA 62, 69 (1972). Consequently, a crucial requirement is that the deposit be physically exposed as of the date of withdrawal, see Conner, 139 IBLA at 364, and the discovery

¹¹The transcript makes clear that Exhibits A-158, A-159, and A-160 are mismarked as Exhibits A-159, A-160, and A-161, respectively (Tr. 31:4238-59). This Decision references the correct numbers rather than the mismarked numbers on the exhibits.

must be based upon showings of mineral value from the source (mineral deposit) on the claim which was exposed prior to the withdrawal date. See United States v. Converse, A-30177, 72 I.D. 141, 146 (1965), aff'd, 262 F.Supp. 583 (D. Or. 1966), aff'd, 399 F.2d 616 (9th Cir. 1968), cert. denied, 393 U.S. 1025 (1969); Marvel Mining Co. v. Sinclair Oil & Gas Co., A-30871, 75 I.D. 407, 419-20 (1968).

Because it is the date of the exposure of the mineral source, not the date of sampling, which controls, samples taken after the withdrawal date are admissible if taken from the mineral source exposed prior to the withdrawal date. Id.; Converse, 72 I.D. at 146. For example, assay results from drill samples taken from a mineralized zone after the withdrawal date will support a conclusion that there was an exposure of a valuable mineral deposit prior to withdrawal if reasonable geologic projection leads to a conclusion that the drill samples and the exposure made prior to withdrawal are from the same mineralized structure. United States v. Foresyth, 100 IBLA 185, 207 (1987).

Based upon the foregoing precedent, Contestant argues that the data generated post-withdrawal by Contestees is irrelevant. The underlying assumption is that Contestees failed to show the exposure of a mineral deposit or the existence of a valuable mineral deposit as of the withdrawal date and therefore that the claims may be declared invalid without reference to post-withdrawal data or to whether a discovery existed on the date of hearing.

Contestees counter that the post-withdrawal data is relevant because (1) Contestant should have revoked the segregation of the land encumbered by the Mijo claims in 1996 when the land purportedly was dropped from the proposed land use exchange which justified the segregation and (2) because the pertinent samples were taken from points where mineral was exposed prior to the withdrawal date. Ultimately, this dispute is immaterial because the evidence shows that no discovery existed either on the date of withdrawal or at any time thereafter.

i.

The Legality Of The Segregation Is Not Justiciable And Is Irrelevant Under The Notation Rule, And, In Any Event, The Segregation Was Lawful

Contestees argue that, by 1996, the lands encompassed by the Mijo claims had been dropped from the land exchange proposal which served as justification for segregation of the Mijo claims and, consequently, that BLM was required to issue "promptly" an order opening the lands to mineral entry pursuant to 43 C.F.R. § 2201.1-2(2)(c). Contestees argument must be rejected for three reasons.

First, objections to the merits or continuation of a withdrawal are not justiciable in the context of this proceeding. See Ronald A. Pene et al., 147 IBLA 153, 157 (1999); Harry H. Wilson, 35 IBLA 349, 360 (1978). Second, assuming, arguendo, that the issue is justiciable, Contestees' argument is irrelevant because of the notation rule:

It is well established that, under the “notation” or tract book rule, where BLM’s official records have been noted to reflect the devotion of land to a particular use which is exclusive of other conflicting uses, no incompatible rights in that land can attach pursuant to any subsequent entry of application until the record has been changed to reflect that the land is no longer segregated. B.J. Toohey, 88 IBLA 66, 77-82, 92 I.D. 317, 324-26 (1985); O. Glenn Oliver, 73 IBLA 56, 59 (1983); Paiute Oil & Mining Corp., 67 IBLA 17 (1982); and cases cited therein. The rule applies even where the notation was posted to the records in error, or where the segregative use so noted is void, voidable, or has terminated or expired, so long as the records continue to reflect it as efficacious. Paiute Oil and Mining Corp., 67 IBLA at 20.

D. Stone Davis D/B/A, Daisy Trading Co., 155 IBLA 133, 135 (2001).

Mr. Chatterton testified that he reviewed the master title plat (MTP) and that both the first and second segregation were noted on the MTP before or on the date of each segregation. He further testified that the MTP reflected the segregation as in effect ever since the effective date of the first segregation. Contestees did not dispute or attempt to rebut this testimony. Consequently, pursuant to the notation rule, the lands were not available for mineral entry beginning June 6, 1994.

Third, the continuation of the segregation was lawful because (1) the factual premise of Contestees argument is contradicted by Mr. Chatterton’s testimony that all of the segregated lands are still being considered for inclusion in the land exchange, and (2) the IBLA rejected a similar interpretation of the regulation in Edward A. Snider, 152 IBLA 309 (2000). In that case, the appellants argued that, because the underlying land exchange was inactive, § 2201.1-2(2)(c) required the lands to be open. The IBLA stated,

It has long been held that lands which have been segregated from entry under some or all of the public land laws remain so segregated until there is a formal revocation or modification of the segregation. See James E. Morgan, 104 IBLA 204, 205 (1988); Samuel P. Speerstra, 78 IBLA 343, 244 (1984). The regulation cited by appellants simply requires that once BLM makes a decision not to proceed with an exchange, it publish an opening order specifying a date and time. Until the date set in the opening order, the land remains segregated. Thus, regardless of whether or not [the] land exchange . . . was an active exchange at the time of the location of these claims, the land was still segregated from mineral entry at that time.

Snider, 152 IBLA at 312 (emphasis added). Therefore, the lands encumbered by the Mijo claims have been segregated from mineral entry from June 6, 1994 until at least July 23, 2002, when the second segregation order was scheduled to expire.

In posthearing briefing Mr. Matheson states that a “check of the Master Title plat at the

State Office on July 24, 2002 indicated the lands in Section 14, Township 23 South, Range 63 East, in the Alunite Mining District are now open to location.” However, the hearing record contains no such evidence, as the hearing concluded on February 28, 2002.

Assuming, arguendo, that the segregation did expire on July 23, 2002, the import thereof is unclear and has not been briefed by the parties. What is clear from the entire hearing record is that no discovery has existed on the Mijo claims at any time, as more fully discussed elsewhere herein, and therefore the dispute over the relevancy of the post-withdrawal data is immaterial.

ii.

Contestees’ Pre-segregation Evidence Of Mineralization Cannot Be Given Substantial Probative Weight And Fails To Show A Discovery

Contestees’ evidence of mineralization generated before June 6, 1994, does not demonstrate an exposure of a mineral deposit, much less a valuable one, given the paucity of data, the factors diminishing the evidence’s probative worth, and Contestant’s strong evidence of the lack of mineralization. In Exhibit A-129, only six sets of data were generated before June 6, 1994, marked by Contestees as Nos. 1, 2, 3, 4, 4a, and 5 and referred to herein as data sets 1, 2, 3, 4, 4a, and 5, respectively. Contestees also adduced two other data sets derived from samples taken before June 6, 1994, as Exhibits A-158 and A-159 (incorrectly marked as Exhibits A-159 and A-160, respectively). Those data sets and other evidence of purported mineralization are discussed below.

Ex. A-129, No. 1—Sampler: Phebus. Assayer: Phebus

Data set 1 was generated solely by Mr. Phebus. That data set consists of Mr. Phebus’ “best estimate of average assay results” for gold in the head ore and gold in the magnetic concentrate, which are 0.15 oz/ton and 2.0 oz/ton, respectively, for samples taken in 1990 and 1991 (Ex. A-129, p. 1-2; Tr. v. 29:3959, 3964-66).

Mr. Phebus characterized the samples as grab samples taken from the alleged 800-foot by 200-foot major testing pits and from the western half of the Mijo 17 claim (Tr. v. 29:3956-58; Ex. A-129, p. 1). From the latter area, 200 samples were taken, spaced 50 feet apart, in a grid pattern (Tr. v. 29:3957, 3960). Mr. Phebus’ description of the sampling method comported with Contestees’ deficient, typical sampling method of sifting the removed material through a ¼-inch screen into a five-gallon bucket and discarding the over-¼-inch material without weighing it (Tr. v. 29:3956-59)

Mr. Phebus did not know the precise locations of the samples and none of them were monumented (Tr. v. 29:3955, 3960). He also testified that the average values are his recollection of averages determined in approximately 1990 from a couple hundred tests showing “numbers [which] were all over the place” (Tr. v. 29:3963-66) and that a variety of assay techniques and assayers were used to assay the samples, including unconventional methods such as reassaying

the slags and cupels (Tr. v. 29:3971-76). No assay reports, laboratory books, or other similar documentation was adduced in support of Mr. Phebus' average assay estimate.

Data set 1 is unreliable both because of Mr. Phebus' poor credibility and the lack of detailed information regarding the sampling and assaying. As discussed earlier, Mr. Phebus' testimony carries little probative weight because, among other reasons, it is based upon the existence of 800-foot by 200-foot major testing pits which never existed. In addition, his estimate was not and could not have been based upon a proper weighted average value of the samples because information is lacking regarding the correct weight of the samples and the distances between some of the samples. Further, it is impossible to determine whether his estimate is reliable without the sample-specific details, including the assay technique and result and the assayer's identity, reputation, and qualifications.

Ex. A-129, No. 2—Sampler: Phebus, Assayer: Union Miniere

According to Messrs. Phebus and Matheson, the sample for data set 2 (reported values for gold, platinum, and palladium in troy ounces per ton of black sands of 9.324, 4.405, and 10.095, respectively) was the sample taken by Mr. Phebus and sent to Union Miniere for assaying in December 1990 (Tr. v. 3:751-52; v. 13:2344; v. 16:2841). Both witnesses' credibility is suspect, especially with respect to Union Miniere, as Mr. Matheson's testimony regarding the "Belgian" assay procedure was contradicted by Union Miniere officials and Mr. Phebus gave two different accounts of the amount of material extracted for that sample and three different accounts of the sample location (Tr. v. 3:751-52; v. 29:3934; v. 30:4025-26, 4063; v. 38:5628; Ex. A-129, p. 2; Ex. A-183; Ex. HH), with the last one being within one of the 800-foot by 200-foot major testing areas that the record shows could not have existed.

Mr. Phebus also stated that the sample location was not monumented (Tr. v. 30:4029-30), that the sample was weighed only after it was screened and run through a magnetic separator (*id.* p.4027-28), and that he thinks the sample was screened to minus 30 mesh but he "may be wrong on that." (Tr. v. 6:978-79) The failure to show where and how a sample was taken and how the weight of the black sands relates to the weight of the excavated material greatly diminishes the probative value of the assay results.

Contestees also fail to establish the chain of custody. Mr. Phebus gave the sample to Gene Smith who placed it in five five-gallon buckets, sealed the buckets with duct tape, and sent them by Federal Express to Bruxelles, Belgium, for pick up by James Keller, who lives in Germany and is associated with a company called "Quintica" (Tr. v. 26:3499-3500; v. 30:4035-37; v. 31:4363-64; Ex. 61, pp. 1-2, Att. 1). However, Mr. Matheson did not know the details of how the sample was then transferred from James Keller to Union Miniere (Tr. v. 31:4364).

Furthermore, a letter from Union Miniere indicates that every "black sand" sample received from Mr. Keller after the first one showed no commercial quantities of precious metals, and suggests that the first sample may have resulted from apparent "fraud problems inside the Quintica organisation." (Ex. 61, p.2). All these reasons compel the conclusion that data set 2 is

unreliable.

Ex. A-129, No. 3—Sampler: Matheson, Assayer: Rogers Research

Data set 3 (0.218 ounces of gold per ton) was generated from a sample allegedly taken by Mr. Matheson and assayed by Mr. Claire Rogers, the proprietor of Rogers Research (Tr. v. 22:2560-51; v. 30:4089-4100). This data set is not reliable for several reasons.

First, Mr. Matheson admitted not knowing how Mr. Rogers prepared the sample for assay (Tr. v. 30:4098-99), nor is the record clear what type of assay he performed. Mr. Matheson testified that Mr. Rogers applied “an x-ray-type technique” to the sample (Tr. v. 22:2653), later indicating on voir dire that it was “X-ray diffraction, I think, that Mr. Rogers developed himself.” (Tr. v. 30:4098). This appears to be the only explanation of Mr. Roger’s technique in the record.

In light of the apparent uniqueness of Mr. Roger’s process, it cannot be deemed to be reliable without some proof. This is underscored by Mr. Matheson’s concession that Mr. Rogers has “been very controversial in the industry.” (Tr. v. 22:2653).

Second, Mr. Rogers did not competently assay “blind” samples of known standards and blanks provided to him by BLM. Rogers Research was one of the assayers who Contestees claimed could reliably assay Mijo material and to whom BLM sent “blind” samples to test their competency (Tr. v. 39:5804-06, 5817-19). Mr. Rogers “reported that he performed a fire assay and XRF analysis of each sample,” and provided results for both techniques (Ex. 57). The results were far off the mark and scattered “all over the place” (Tr. v. 39:5818), indicating “unbelievably bad laboratory technique” (Tr. v. 39:5819).

Third, Mr. Matheson testified that he screened the sample to minus 1/4-inch (Tr. v. 30:4091), but the assay sheet from Rogers Research indicates that the assay was performed on “head ore” (Ex. A-129, p. 3-1). In addition, Mr. Matheson admitted that he followed his usual procedure of not weighing any of the excavated material because he assumes that 50 percent would pass through the 1/4-inch screen (Tr. v. 30:4092). Consequently, it is impossible to calculate the exact value of the excavated material.

Ex. A-129, Nos. 4 and 4A—Sampler: Matheson/Ager, Assayer: DCRS (Barefoot)

Data sets Nos. 4 (0.037 ounces of gold per ton) and 4A (0.069 ounces of gold per ton) were generated from samples taken by Mr. Matheson and Dr. Ager in October and May, respectively, of 1993, and purportedly processed by Robert Barefoot of DCRS (US) Ltd. to produce certain amounts of gold. These data sets are unreliable for several reasons.

First, Contestees failed to show that Mr. Barefoot is a qualified and reputable assayer. They failed to adduce any evidence of his education, training, or professional affiliations other than equivocal statements by Dr. Ager and Mr. Matheson that they thought Mr. Barefoot was a

chemist (Tr. v. 19:3418-19; v. 30:4116). Mr. Matheson mistakenly equated Mr. Barefoot with Dr. Ron Barefoot, an analytical geochemist (Ex. 2, Atts. 9-8a, 9-8b; Tr. v. 36:5374-75), so even the equivocal statements as to Mr. Barefoot's chemistry background may be based upon misinformation.

Further, Mr. Barefoot's reports indicate that the samples were analyzed in Arizona (Ex. A-129, pp. 4-1, 4A-1), but he is not registered in that state to conduct assays (Ex. 2, p. 16; Tr. v. 19:3418, v. 36:5378). Arizona state law requires all assayers to be registered and provides for criminal penalties for those that are not. See Ariz. Rev. Stat. §§ 32-101(B)(5), 32-121, 32-145.

In light of the lack of information regarding Mr. Barefoot's qualifications and reputation, an adequate description of his assaying techniques is particularly important. That description was not provided.

The process used by Mr. Barefoot to produce the reported gold in both data sets 4 and 4A is not adequately explained or identified as being conventional or reliable. Mr. Barefoot's reports indicate he processed the material through a "DCRS Autocon metal concentrator" then "electro-amalgamated" the product "with the amalgams distilled and treated with concentrated nitric acid to liberate the bullion." (Ex. A-129, pp. 4-1, 4A-1). Dr. Ager testified that he never actually saw Mr. Barefoot's process work on the samples taken from the Mijo claims (the October 1993 samples) (Tr. v. 19:3420-21), and that Mr. Barefoot refused to explain to him how the process worked (Tr. v. 18:3227, v. 19:3426). Mr. Matheson similarly testified that he did not know what process Mr. Barefoot used (Tr. v. 30:4114-15).

The record does provide some detail as to several processes that Mr. Barefoot apparently developed, including one called the "DCRS recovery technique" and a patented process (Ex. 2, Att. 9-8g, -8l, -8m to -8o, -8q to -8r). However, there is no evidence establishing that the process allegedly used on the Mijo material is the same as any of these other processes. Whatever process was used on the Mijo material apparently has not been commercially successful because Mr. Barefoot's mill (the DCRS facility in Congress, Arizona) is in a state of disuse and Mr. Barefoot is pursuing other vocations (Tr. v. 30:4117; v. 36:5375-77).

Details regarding the samplings are also lacking. With respect to data set No. 4, which was generated in October 1993, Contestees adduced a map to show the sampling locations (Ex. A-129, p. 4-2; see also Tr. v. 19:3416-17, 3424). However, the map gives only an east-west measurement to determine the sampling sites, not a north-south measurement. Also, the units for the east-west measurement are shown to be in feet, but Mr. Matheson admitted that the measurement was made by Dr. Ager simply pacing off a number of steps (Tr. v. 30:4103-04), which is not very precise.

Dr. Ager testified that he took the samples by using a shovel and putting the raw material through a screen into a bucket, which he then took to Mr. Barefoot's facility (see Tr. v. 19:3416-17), and Mr. Matheson testified that the screen was minus 1/4-inch (see Tr. v. 30:4104, 4108).

However, Mr. Matheson admitted that the raw material was not weighed and that there was some spillage of the minus-1/4-inch fraction (see id.:4109), so it is impossible to know the value of the material that had been excavated. In addition, Dr. Ager's and Mr. Matheson's assertion that the samples were screened is contradicted by Mr. Barefoot's report stating that he received "alluvial bulk" samples which he screened using a minus-1/4-inch mesh before processing (Ex. A-129, p. 4-1).

With respect to data set No. 4A, which was generated in May 1993, Contestees also failed to establish the exact sampling location (Tr. v. 30:4123-24) (Matheson testifying that the location was not monumented and that he could not locate it any better than saying it was "probably 2- or 300 feet" from a geologic survey marker). Mr. Matheson testified that the sample was split, with one of the splits being assayed by Brian Stone doing business as Gold Hunter (Tr. v. 32:4602, 4604, 4610-11; Ex. A-158). On identical maps Mr. Matheson marked the sample location to the west of a geological feature for the split sent to Mr. Barefoot and to the east of that feature for the split sent to Mr. Stone (Ex. A-129, p. 4A; Ex. A-159).

Mr. Matheson also admitted that he did not weigh the material that was excavated and that some of the minus-1/4-inch fraction spilled during screening (Tr. v. 30:4124-25), which precludes calculating the value of the excavated material. In addition, Mr. Matheson's claim that this sample was screened is again inconsistent with Mr. Barefoot's report for this sample, which states that he received an "alluvial bulk" sample (Ex. A-129, p. 4A-1).

Given all these circumstances, data set Nos. 4 and 4A are entitled to little or no probative weight.

Ex. A-129, No. 5—Sampler: Matheson, Assayer: Rogers Research

Data set No. 5 is based on a sample allegedly taken by Mr. Matheson and assayed by Mr. Rogers (Tr. v. 22:2657-58; v. 30:4128-35; v. 32:4597-99). This data set lacks probative worth because the exact sampling location, the amount of material excavated for the sample, and the exact process used to prepare the sample are unknown, the assay technique employed by Mr. Rogers is unknown, and Mr. Rogers is an incompetent assayer.

Mr. Matheson was imprecise in describing the sampling location, stating that he took this sample by wandering "probably 300 feet down and 300 feet out" from the corner of Mijo 17, and that the sampling location was never monumented (Tr. v. 30:4128). Likewise, the evidence of how the sample was processed before it was sent to Mr. Rogers is less than clear.

Mr. Matheson followed the usual sampling method, which means that the sample was screened to minus 1/4-inch without weighing it (Tr. v. 30:4130-32). He further treated the sample in some manner but does not remember how (Tr. v. 30:4131-32). He then took the sample to Mr. Al Johnson's laboratory and, with a magnetic separator, personally made a concentrate that was sent to Rogers Research (Tr. v. 22:2657; v. 30:4130; v. 32:4597-99). Mr. Matheson did not explain the assay sheet references to results of 0.33 gold ounces per ton for "MAGS 1st PASS,"

0.23 gold ounces per ton for “MAGS 2nd PASS,” and 0.11 gold ounces per ton for “NON MAGS AFTER 2nd PASS.” (Ex. A-129, p. 5-1).

That assay sheet is problematic for another reason: it is not signed nor is it on the letterhead used in other reports from Rogers Research that both predate and postdate the assay sheet, both of which bear Mr. Rogers’ signature (compare Ex. A-129, p. 5-1 with id., pp. 3-1 and 6-1). More importantly, Mr. Matheson did not know what type of assay Mr. Rogers performed (Tr. v. 30:4134) and Mr. Rogers, as previously mentioned, could not competently assay standards and blanks.

Ex. A-158–Sampler: Matheson, Assayer: Gold Hunter (Stone)

The data set in Exhibit A-158 (average of 0.4235 gold oz/ton for 3 splits of a sample) was generated from a sample taken by Mr. Matheson, with a split sent to Mr. Barefoot (data set 4A) and apparently three additional splits made and assayed by Mr. Stone doing business as Gold Hunter.¹² (Ex. A-158; Tr. v. 31:4237-40; v. 32:4600-04, 4609-15). According to Mr. Matheson, the sample processing included a soak in water for five days, concentration using towers similar to those described in a book by Walter Lashley, and mercury amalgamation (Tr. v. 32:4601-03, 4609, 4611-13). At some unknown point in time the splits were apparently ground and/or screened in different ways (Ex. A-158).

This data set lacks probative value because the sampling location is not clear (as discussed above regarding the split sent to Mr. Barefoot - data set 4), because the weight of the excavated material is unknown, because the results are vastly different from Mr. Barefoot’s assay results of 0.069 gold ounces per ton for a split of the same sample, because there is no assay report, and because nothing in the record indicates Mr. Stone’s qualifications to perform assays. The last point is especially important in light of Mr. Matheson’s statements that he thought

Mr. Stone’s background was in physical education, that Mr. Stone is “probably on the bottom 10 percent of all the people we dealt with,” and that Mr. Stone’s assay technique is “certainly unusual” (Tr. v. 32:4602, 4612).

Ex. A-159–Sampler: Matheson, Assayer: Vincent

The data set in Exhibit A-159 (average of 0.28 gold oz/ton) is reportedly the average assay result for eight samples taken from the Mijo 17 claim by Mr. Matheson and assayed by Mr. Vincent (who is now deceased). On June 20, 1997, Dr. Lechler personally observed assays of Eldorado Valley material being conducted at Mr. Vincent’s lab. He did so at Mr. Matheson’s request in an attempt to address the wide range of assay results pertaining to the “Del Gratia property” (i.e., the Josh claims). Dr. Lechler reached many unflattering conclusions in a letter to

¹²The sample apparently was taken on May 17, 1993, prior to segregation, and assayed on June 29, 1994, after segregation (Ex. A-158).

Mr. Matheson dated November 19, 1997:

With so much sample manipulation in a non-laboratory environment (actually a garage with some simple laboratory equipment), accuracy is bound to suffer and potential for contamination, or cross-contamination, becomes very high.

Minimal, ineffective cleaning of grinding equipment between samples, for instance, leads to cross contamination and is probably partly responsible for the high[-valued] blank observed during tests. Poor accuracy of the measured gold value on the NBMG standard is another indication of the limitations of this facility.

* * * [T]he flux is more elaborately contrived than is necessary or wise, and the use of both oxidizing and reducing agents in the flux indicates a lack of understanding of the fire assaying process. Mr. Vincent appears experienced in the mechanics of conducting a fire assay, but not in the theory and chemical principals that form the foundation for the method.

(Ex. 37; see also Tr. 37:5453-64, 5573-76).

These conclusions are not surprising, given the evidence of Mr. Vincent's background. Mr. Matheson stated that Mr. Vincent was a fireman on disability who became a professional poker player and who had performed over 10,000 assays (Tr. v. 23:2494-95). Mr. White, who lacks competency as an assayer, testified that he taught Mr. Vincent how to assay, that Mr. Vincent developed into a good assayer, and that he was honest (Tr. v. 8:1467-68; see also Tr. v. 23:2493-94).

The data set in Exhibit A-159 lacks probative value because there is no description of the sampling locations other than rough approximations on a very small scale map (Ex. A-159), no evidence whether the excavated material was weighed, no assay report or objective evidence supporting the reported values, no adequate showing that Mr. Vincent was a qualified, competent assayer, and no indication of what type of assay was used or how the sample was prepared for assay (Tr. v. 31:4240-45). In addition, Mr. Matheson reported only a numeric average (rather than one value for each of the eight samples or a weighted average).

Other Evidence of Mineralization

Messrs. Phebus and Matheson discussed purported pieces of PGM's and/or gold allegedly recovered from the Mijo claims as evidence of mineralization. They reference purported buttons or beads recovered by Messrs. Henderson, Vincent and Phebus and purported gold bars refined by Mr. Phebus (see, e.g., Tr. v. 23:2746-48, 2755; v. 29:3902-10, 3994-95, 3994-95; v. 31:4353-55; v. 32:4425-30; v. 41:6269; Ex. A-145).

The testimony regarding the gold bars and hundreds of beads purported recovered by Mr. Phebus lacks substantial probative weight because the situs for the samples, with a few exceptions for some of the beads (Tr. v. 29:3902-10, 3994-95), and the amount of the excavated

material processed to allegedly recover the gold are unknown and the witnesses' credibility is not good. Further, no testimony was provided as to the weight of the beads.

The same conclusion applies to the gold beads or buttons allegedly recovered by Messrs. Vincent and Henderson for the same reasons. Moreover, Contestees did not even show that those alleged beads derived from Mijo material (Tr. v. 23:2746-48, 2755; v. 31:4353-55; v. 32:4425-30).

The record also contains evidence of assay results from samples taken elsewhere in the Eldorado Valley and assayed by Mr. White, Ben d'Andrimont at Core International, Hazen Reseach, Paul Guadagnoli, and others (see, e.g., Ex. A-58; Ex. 2, Att. 9-6, 9-9a thru 9-9q, 9-21a thru 9-23; Tr. v. 22:2652; v. 39:5839). While that evidence may have some relevance as to the efficacy of certain processes in detecting precious metals in Eldorado Valley material, it otherwise is irrelevant in determining the quality and quantity of mineralization on the Mijo claims.

c.

**Contestees' Post-segregation Evidence Of Mineralization Cannot Be Given
Substantial Probative Weight And Fails To Show A Discovery**

Consideration of Contestees' data sets generated post-segregation does not alter the conclusion that the weight of the evidence shows a lack of discovery of a valuable mineral deposit at all times. These data sets include the remaining parts of Exhibit A-129 and Exhibit A-160. Most, if not all, of these data sets are unreliable for many of the same reasons discussed above.

Ex. A-129, No. 6–Sampler: Matheson, Assayer: Rogers Research

Mr. Matheson testified that data set 6 (0.20 gold oz./ton) is the assay result for a sample taken by him and assayed by Rogers Research (Tr. v. 22:2658-59). The purchase order used by Mr. Matheson to track the sample indicates that "head ore" was assayed (Ex. A-129, p. 6-2), and both the purchase order and Mr. Matheson's testimony indicate that the assay was performed by "spectographic" analysis (see id.; Tr. v. 22:2659). However, there is no explanation what type of "spectographic" analysis was used. Presumably, it was the X-ray analysis developed by Mr. Rogers to produce the report for data set No. 3. This data set is unreliable because, as previously mentioned, Mr. Rogers did not competently assay standards and blanks and because the exact sampling location, sampling protocol, sample weight, and sample processing are unknown or unclear.

Ex. A-129, No. 7–Sampler: Morris, Assayer: White

Data set No. 7 is the assay results for the Bonanza drill samples taken by Mr. Morris in 1996 and assayed by Mr. White (Ex. A-129, pp. 7-2 to 7-5). The results range from 0.110 to

1.020 gold ounces per ton. This data set lacks probative weight primarily because, as previously mentioned, assay results from Mr. White and his lab cannot be considered reliable and because Mr. Morris did not remember weighing the samples (Tr. v. 23:2775).

Ex. A-129, No. 8–Sampler: Matheson, Assayer: Chemtron Labs

Mr. Matheson testified that data set 8 (0.120 gold oz/ton) is the result of an assay of a sample taken by him, concentrated by magnetism, and assayed by Chemtron Labs (Tr. v. 22:2669). This data set lacks probative value because the exact sampling location, sampling process, assay technique, and reputation and qualifications of the assayer are unknown and because the chain of custody is questionable.

Regarding the chain of custody, the pertinent purchase order, under “SHIP TO,” indicates that the sample was submitted to “Pyramid Ind” (apparently Pyramid Industries) in Santa Clarita, California (Ex. A-129, p. 8-2), not Chemtron Labs. The purported assay sheet shows Chemtron Labs as having its place of business in Saugus, California (Ex. A-129, p. 8-1). No explanation for this discrepancy exists in the record.

Ex. A-129, No. 8A–Sampler: Matheson, Assayer: White

Mr. Matheson testified, and the sample data sheet shows, that data set 8A (0.735 gold oz./ton) is the result of an assay of a sample taken by Messrs. Matheson, Moore, and Phebus in December 1997, concentrated by magnetism, and assayed by Mr. White using a bromine leach (Tr. v. 22:2669-70; Ex. A-129, p. 8A). However, Mr. Moore could not have been involved in the sampling because he did not move to the area and begin assisting Contestees until May or June 1998 (Tr. v. 8:1341, 1343). Data set 8A lacks probative value because Mr. Matheson incorrectly identified Mr. Moore as one of the samplers, because assay results from Mr. White and his lab cannot be considered reliable, and because the exact sampling location and sampling process are unknown.

Ex. A-129, Nos. 10, 11, and 12–
Sampler: Moore and/or Phebus, Assayer: EII (Gunnison)

Data sets Nos. 10, 11, and 12 are assay results from samples purportedly taken by Mr. Moore in February and April of 1998 from a site known as the John No. 2 Hole and analyzed by Mr. Gunnison using a standard fire assay (Ex. A-129, pp. 10, 10-2, 11, 12, 12-2; Tr. v. 8:1399-1403; v. 22:2671-73; v. 27:3715-21; v. 30:4683-84).¹³ These results include the incredible gold values in ounces per ton of 23.25, 22.72, 22.57, and 22.88 that allegedly prompted EII to expand its Phoenix facility. However, Mr. Moore could not have been involved in the samplings because he did not move to the Las Vegas area and begin assisting Contestees until May or June 1998.

¹³Data set 9 does not exist.

Sometime in 1996 the John No. 2 Hole was dug to a depth of 12 to 13 feet using a backhoe, some of the excavated material was left piled next to the hole, and then the hole was filled in (Tr. v. 8:1400; v. 27: 3718-19). Mr. Moore testified that he shoveled each sample from the pile of excavated material onto a minus- $\frac{1}{4}$ -inch screen resting over a 5-gallon bucket (Tr. v. 8:1400-01; v. 27:3713-14; v. 28:3779-80). According to Mr. Moore, he then weighed the bucket of screened material, dumped the sample onto a piece of plywood, and separated with a hand magnet the magnetic portion of the sample for assaying (*id.*).

The assay results from these samples lack probative value because the excavated material was not weighed, because Mr. Moore's testimony is not credible, given that he did not begin working for Contestees until after the samples were taken, because the assays were performed by Mr. Gunnison who lacks credibility, and because the sample site likely is not on the Mijo claims. Using the Contestees' own exhibit showing the location of John No. 2 Hole (Ex. A-50) and aerial photography, Mr. Clay demonstrated that this locale likely is not on the Mijo claims (Tr. v. 40:6008-11; see also Ex. 70-C (showing with an "T" the location of John No. 2 on the 1999 aerial photograph of the area)). Mr. Clay's testimony stands unrebutted and is bolstered by the fact that Contestees displayed a pattern of incorrectly identifying numerous disturbances to the east of the Mijo claims as being on the claims (*e.g.*, the north-south road Mr. Phebus depicted on Ex. A-183 and many of the pits dug by Bonanza in December 1998).

Ex. A-129, No. 13—Sampler: Matheson, Assayer: Rogers Research

Data set 13 (0.08 gold oz./ton) is the assay result for a sample taken by Mr. Matheson and assayed by Mr. Rogers. The sample was shoveled from somewhere in Bonanza's pit area and screened into a five-gallon bucket in the usual fashion so that the exact weight and location of the sample are not known (Tr. v. 33:4809). The minus- $\frac{1}{4}$ -inch fraction was then concentrated by rake magnet and assayed using "XRF", which Mr. Matheson identified as x-ray diffraction (Ex. A-129, p. 13-1; Tr. v. 33:4813-14). This data set lacks probative weight because Mr. Rogers is not a competent assayer and because the exact sampling location and weight of the excavated material are unknown.

Ex. A-129, Nos. 14, 15, 17, 18, 19, and 20—
Sampler: Moore, Assayer: EII (Gunnison)

Data sets 14, 15, 17, 18, 19, and 20 are assay results ranging from nil to 4.13 gold ounces per ton for samples collected by Mr. Moore and fire assayed by Mr. Gunnison in Arizona. All of these samples, except that for data set 15, were taken in Bonanza's pit from piles of material which Bonanza screened and ran over the magnetic separator to separate into piles of magnetics and non-magnetics (Tr. v. 22:2684, 2688; v. 28:3783-85; v. 33:4820-23). Consequently, neither the precise location of the piles (Tr. v. 27:4821) nor the origin of the material in the piles is known.

These data sets lack probative worth for several reasons, including that Mr. Gunnison's work cannot be considered reliable, that Mr. Moore's credibility is suspect, and that the source

locations for the sampled material are unclear. Also, the processing technique for the data set 14 sample is unclear because the sample was initially sent to Smart Technology where it was processed through a “sluice-type thing” and concentrated using “new, sophisticated magnets” before being forwarded to Mr. Gunnison for assaying (Tr. v. 22:2683-84; v. 27:3724).

Data set 15 was taken from the John No. 1 Hole sampling site (Ex. A-129, p. 15; Tr. v. 22:2684; v. 27:3725), but the record shows that the John No. 1 Hole is not on the Mijo claims. As with the John No. 2 Hole discussed above, Mr. Clay demonstrated that the John No. 1 Hole is not on the Mijo claims by comparing the information on Exhibit A-50 with aerial photography of the area (Tr. v. 40:6008-11; see also Ex. 70-C (showing with a “G” the location of John No. 1 on the 1999 aerial photograph of the area). Again, Mr. Clay’s testimony stands un rebutted.

Data sets 17, 18, 19, and 20, were taken from sample sites described as the “A,” “B,” “C,” or “D” piles. However, a comparison of the maps for these data sets shows the sites being in different places on different maps (see Ex. A-129, p.17, 18, 19, 20), indicating confusion regarding the locations of the piles which was never adequately explained (see Tr. v. 22:2686-92; v. 27:3728-44; v. 33:4818-23).

Moreover, Mr. Matheson testified that the assay results for the “C” pile in data set 17 were for samples taken from area “C” on Exhibit 51 (Tr. v. 22:2686-87). Exhibit A-51 is a map associating the “C” pile assay results with area “C”. However, Mr. Matheson subsequently testified, and Mr. Moore confirmed, that the “C” pile samples were taken from the Bonanza pit area, which is area “A”, not area “C”, on Exhibit A-51 (Tr. v. 28:3783-85; v. 33:4821-23).

Ex. A-129, No. 21–Sampler: Matheson, Assayer: MRAL (Jordan)

Data set 21 (0.08 gold oz./ton and 1.18 silver oz./ton) is generated from a sample reportedly taken by Mr. Matheson from a site referred to as BLM Hole No. 1 and assayed at MRAL. The two assay methods were scorification followed by re-assay of the slag (Tr. v. 22:2693-94; Ex. A-129, pp. 21-1, 21-2). One assay sheet reports the total precious metals for both assays to be 0.07 oz/ton and 0.90 oz/ton for gold and silver, respectively, rather than 0.08 oz/ton and 1.18 oz/ton as reported by Mr. Matheson (compare Ex. A-129, p. 21 with Ex. A-129, p. 21-2). The assay sheet for the scorification alone (assay number 5043) was not adduced. The assay sheets provided were certified by Dr. Jordan, the proprietor of MRAL, but Mr. Matheson testified that David Graham conducted the assay (Tr. v. 22:2693-94). This data set lacks probative worth because MRAL is not a reliable assay lab, Dr. Jordan’s reputation is poor, the method of sampling was not adduced, and the only evidence regarding sample preparation is notations on the assay sheets suggesting that the material received by Dr. Jordan had been screened to minus 1/4-inch and grinded to minus 100 mesh (Ex. A-129, pp. 21-1, 21-2).

The incompetency of the MRAL lab was documented by the BLM mineral examiners. BLM sent samples to MRAL as part of a general survey to test the competency of Contestees’ assayers. As discussed earlier, BLM sent “blind” samples of known standards and blanks to a

number of these assayers, including MRAL (Tr. v. 39:5804-06, 5814-17).

Mr. Graham prepared the samples for assay while the mineral examiners observed (Ex. 2, p. 36). They opined that “the lab technique that we witnessed was poor, sloppy, and careless. Cross-contamination and loss of material were routine.” (Ex. 2, p. 38)

With regard to the assay results provided by MRAL and certified by Dr. Jordan (Ex. 2, Atts. 11B-8a to 11B-8i), Mr. Shumaker concluded that they “are grossly incompetent” because “everything that he reported is wrong.” (Tr. v. 39:5816). Among other things, Dr. Jordan reported substantial gold in different amounts for replicates of the same blank and grossly inaccurate values for the standards (*id.*). One of the values reported by Dr. Jordan, for osmium, suggests that he did not actually do the work, because the concentration of osmium he reported would have caused a deadly chemical reaction using the technique that Dr. Jordan typically applies (Tr. v. 36:5316; v. 39:5816-17). Mr. Shumaker participated as a witness in another proceeding in which a state administrative law judge recently reached a similar conclusion that assays results generated by Dr. Jordan were “highly suspicious and unreliable.” Peeples v. Arizona State Land Department, 01F-009-LAN (Ariz. Office of Admin. Hearings) (Ex. 60, p. 28).

As for Dr. Jordan’s reputation, Special Agent August, based on numerous interviews of people within the mining industry and various regulatory agencies, found that Dr. Jordan’s reputation is “very, very poor.” (Tr. v. 40:6123). Agent August testified that Dr. Jordan has a “track record of involvement with mining operations that have turned out to be scams or have basically vanished without ever being heard from again.” *Id.* Agent August also testified that, during an interview of Dr. Jordan, Dr. Jordan admitted that he would sign assay reports for work he did not do himself (Tr. v. 40:6127).

Dr. Pray similarly testified that Dr. Jordan’s reputation is “unacceptable” (Tr. v. 39:5913) and related his own personal experiences in that regard. On 30 to 40 separate occasions investors asked Dr. Pray to assay splits of samples which were also assayed by Dr. Jordan (Tr. v. 39:5914). Dr. Pray found vast discrepancies between his results and those of Dr. Jordan (*id.*). Even Mr. Matheson stated that Dr. Jordan “certainly” has a “mixed reputation in the industry.” (Tr. v. 13:2318-19).

Ex. A-129, No. 22–Sampler: Moore,
Assayer: Complex Metals (Henderson) and MRAL (Jordan)

Data set 22 is the average assay result of 0.25 gold ounces per ton for splits of seven samples from the CSR drill holes which were assayed by Mr. Henderson and Dr. Jordan. According to Mr. Moore’s affidavit, the samples were taken by him, screened to minus ¼-inch, twice split, and screened to minus 30 mesh (Ex. A-129, pp. 23-6, 23-8). One pound samples were then separated into air tight bags which were sealed in five-gallon buckets and sent to Mr. Henderson (*id.*).

Splits were likewise processed and sent to Mr. White (id.). The assay results for those splits constitute data set 23.

Mr. Henderson reportedly performed a scorifying-assay on the splits sent to him and then sent the “residue” to Dr. Jordan, who performed a “DCP”¹⁴ analysis on the material (Ex. A-129, pp. 22-1, 22-2; Tr. v. 3:662, 680-82). Data set 22 lacks probative weight because Messrs. Moore, Henderson, and Jordan all lack credibility and/or are incompetent and because the assay results from data set 22 differ substantially from the results of splits from the same samples, i.e., data set 23.

In addition, an examination of the sampling process and the protocol apparently followed by Mr. Henderson indicates that the results reported on page 22 of Exhibit A-129 – even if they could be trusted – cannot be considered representative. Mr. Henderson purportedly assayed seven different samples, resulting in seven specimens of “residue”¹⁵ that Mr. Henderson combined into one sample and shipped to Dr. Jordan. Dr. Jordan then performed DCP on the sample, which weighed 23.3 mg according to his assay sheet, and generated three figures, 0.25 oz/ton for gold, 0.01 oz/ton for platinum, and 0.05 oz/ton for palladium (Ex. A-129, p. 22-2). Mr. Henderson characterized Dr. Jordan’s figures as “combined average results from the seven samples assayed” (id., p. 22-1).

Aside from the fact that numeric averaging is problematic, as previously noted, there is no adequate explanation of how the figures relate to the weight of the excavated material or even the weight of the material after screening. Nor is there any evidence of the weight of the excavated material or the screened material. Consequently, it is impossible to know whether the results are representative of what is in the ground.

Ex. A-129, No. 23–Sampler: Moore, Assayer: White

Data set No. 23 is assay results ranging from 0.05 to 0.110 ounces of gold per ton for

¹⁴A witness definition of the acronym “DCP” could not be found in the record, but it presumably refers to direct-coupled plasma-optical emission spectrometry (see Ex. 9, p. 8)

¹⁵The “residue” was created by inquarting silver, putting the inquarted material into a nitric acid solution, “tak[ing] that [solution] clear to dryness” rather than using the solution to separate the silver from the gold and platinum, placing the dried material in the furnace at 600 degrees for two hours, letting it cool, adding distilled water, and warming that solution (Tr. v. 3:682). Most of the silver purportedly goes into the distilled water solution and the gold and platinum, which does not go into that solution, is the residue (id.). This procedure is abnormal, as recognized by Mr. Henderson (id.), because the nitric acid solution is typically used to part the silver from the gold and platinum and the parting is achieved during the cupellation stage (or sometimes in the fusion stage) (Ex. 8, pp. 32-33). Mr. Henderson failed to explain the scientific basis for this abnormal procedure.

splits of the seven samples taken by Mr. Moore from the CSR drill holes. Mr. Moore sent these splits to Mr. White at the same time he sent the splits included in data set 22 to Mr. Henderson (Ex. A-129, pp. 23-7, 23-8; Tr. v. 22:2694-95; v. 28:3756-62, 3792). Like data set 22, data set 23 lacks probative value because the involved persons, Messrs. Moore and White, lack credibility, because there is no indication what the excavated or screened material weighed, and because the assay results differ substantially from the results for the splits of the same samples (data set No. 22).

Ex. A-129, No. 25–Sampler: Holman/Matheson,
Assayer: Sierra Laboratories (Steele)

Data set No. 25 was generated from two samples taken by Dennis Holman in Mr. Matheson’s presence in the northeast portion of the Mijo 16 claim and assayed by Sierra Laboratories, whose principal is Ray Steele (Tr. v. 22:2696-98; v. 30:4088-89; v. 33:4823-31).¹⁶ This data set lacks probative weight because the qualifications and reputations of Messrs. Holman and Steele and Sierra Laboratories were not adduced, the exact sampling locations are unknown, and there is no assay report for the results from the sample location indicated as “#2 - 19' Deep Cut.” (Ex. A-129, pp. 25, 25-1) (The only assay report for this data set is for the sample location indicated as “#1 - NE Cut.”)

In addition, the analysis purportedly used by Mr. Steele is unusual and its reliability is unknown. Although the record is not entirely clear, Mr. Steele purportedly used some type of ICP analysis. (Tr. v. 22:2697-98; v. 33:4825, 4827). However, Mr. Matheson admitted that Mr. Steele treated the sample in an “unusual” manner apparently developed by Mr. Steele, and that Mr. Matheson did not know the procedure (Tr. v. 33:4828-30). There is nothing else in the record explaining Mr. Steele’s unusual procedure, much less suggesting that it is reliable.

Ex. A-129, No. 26–Sampler: Graham, Assayer: MRAL (Jordan or Graham)

Data set 26 is the assay results for samples taken by David Graham and assayed at MRAL. Apparently, Mr. Graham conducted the assays, but Mr. Jordan signed the assay reports (compare Ex. A-129, p. 26-1 (Graham affidavit suggesting that Graham performed the assays) and Tr. v. 22:2526-27 (Matheson testifying that Graham “ran them,” referring to the assays) with Ex. A-129, pp. 26-2, 26-3, 26-4 (MRAL assay reports signed by Dr. Jordan)). This data set lacks probative value because MRAL is not a reliable lab, Mr. Graham was involved in the sloppy processing of the BLM samples for which MRAL produced incompetent assay results, the qualifications and experience of Mr. Graham are unknown, and Mr. Jordan’s reputation is poor.

Furthermore, it is difficult if not impossible to relate the results to the material excavated

¹⁶Data set No. 24 was removed as being redundant with a data set elsewhere in Exhibit A-129 (Tr. v. 22:2695-96).

from the claim. The affidavit and the assay sheets indicate that a 29 lb. bulk sample of original material was concentrated in three steps: by a minus-1/16-inch screen, a Wifley table, and a magnetic separator (Ex. A-129, p. 26-1 to 26-4). The assay sheets report a gold value for the magnetic portion (0.70 oz./ton), the nonmagnetic portion (1.06 oz./ton), and the “tailings,” (0.03 oz./ton) but there is no indication as to what constitutes the tailings – the material rejected by the minus-1/16-inch screen, the Wifley table, or both. Thus, the record does not permit a determination of whether the results are representative of the material in the ground.

Ex. A-129, No. 27–Sampler: Matheson/Moore, Assayer: Bondar Clegg

Data set 27 is the assay results for a sample taken by Messrs. Matheson and Moore and assayed by Bondar Clegg. Bondar Clegg generally reported no gold (Ex. A-129, p. 27), but Dr. Ager and Mr. Matheson testified that Dr. Ager examined, with an electron microscope, the cupel and slag from the assay of that sample and identified gold therein (Tr. v. 17:3050; v. 18:3095-96; v. 22:2705). However, the credibility of Messrs. Ager and Matheson is suspect and their testimony is unsupported by any objective evidence, such as the photograph of the precious metals which Dr. Ager reportedly took (Tr. v. 18:3095-96). Under the circumstances, that testimony carries little probative weight.

Ex. A-129, Nos. 28 and 29–Sampler: Moore, Assayer: Mountain States

Data sets 28 and 29 were from samples collected by Mr. Moore, submitted for assay by Mr. Matheson, and assayed by Mountain States (Tr. v. 22:2705-08; v. 28:3763-65). Data sets 28 and 29 fail to support Contestees’ position that a discovery was made on the Mijo claims for several reasons.

First, there is no evidence of the weight of the excavated material or the method of sampling (unless it is assumed that the typical method was followed). Second, to the extent the assay results for each data set show substantial gold they are not consistent with the rest of the results for that data set.

Each data set suffers deficiencies peculiar to it as well. Data set 28 is two assays for a sample that was magnetically concentrated (Tr. v. 28:3763), apparently with one assay of the head ore and one of the magnetic concentrate (Ex. A-129, p. 28-1). These two assays were conducted using the Belgian procedure at Mr. Henderson’s direction because Mr. Matheson wanted him to show Mountain States how to perform the Belgian procedure (Tr. v. 22:27026-07; Ex. 34). No gold or silver was detected, except for gold in the head ore of 0.043 oz/ton (*id.*).

The fact that the assays were conducted at Mr. Henderson’s direction is problematic because he is not reliable. Those assays were also performed using an abnormally small sample (2 grams as opposed to the industry standard of 30 grams) and abnormally large silver in quart (1 gram versus the industry standard of 1 milligram) so that any gold reported on the assay sheet may have derived from the silver in quart (Ex. 34).

Problems specific to data set 29 include the fact that the exact sampling location is unknown (see Tr. v. 28:3764-65; v. 33:4832). Data set 29 is multiple assay results from a sample taken from the Mijo 16 claim. Apparently, the sample was split, as there are four rows of assay results as follows:

SAMPLE IDENTIFICATION	After Leach		Prior To Leach	
	Au Oz/Ton	Ag Oz/Ton	Au Oz/Ton	Ag Oz/Ton
#1 L. Res. As is	0.038	0.02	0.004	ND
#1 L. Res. Pulv.	ND	0.01	ND	0.01
#1 Soin. As is	ND	0.02		
#1 Soin. Pulv.	ND	ND		

(Ex. A-129, p. 29-1). “ND” means “none detected” (*id.*) and “Pulv” means that the split was pulverized (Ex. 34). The first two rows of splits were fire assayed twice (Exs. 34; Ex. A-129, p. 29-1).

Mr. Matheson testified that he added the column markings “after leach” and “prior to leach” to the assay certificate based on what Mountain States told him (Tr. v. 33:4832-40). According to Mr. Matheson, Mountain States told him that fire assays had been conducted on individual splits both before and after application of a sulfuric acid leach, that the sample identification shorthand “L. Res.” meant leach residue, and that the values under the “after leach” columns were results of fire assays on the leach residue (*id.*). This explanation makes no sense because there are values under the “prior to leach” columns for splits identified with the “L. Res.” shorthand.

Furthermore, the explanation is contrary to statements of Walter Lemming, the registered assayer who signed the assay sheets for Mountain States, who told Mr. Shumaker that the two sets of results for the first row split were replicate analyses of the same material and not analyses of material before and after leaching (Ex. 34; Tr. v. 36:5441-44, 5461-63). Mr. Lemming also noted that all of the assay results for the pulverized splits detected no gold and opined that they probably were a more accurate characterization of the sample as a whole (Ex. 34).

Ex. A-129, Nos. 30 and 31—Sampler: Moore,
Assayer: Queens University (Yen)

Data sets 30 and 31 were generated from samples reportedly taken by Mr. Moore and assayed by a Dr. Yen at Queen’s University (Tr. v. 22:2708-09; v. 28:3765-66). These data sets lack probative value because the sampling and processing protocol were not identified, the sample for data set 31 was taken from the John No. 2 Hole, which is not on the Mijo claims, and

Dr. Yen's work cannot be considered reliable in light of his performance assaying samples provided to him by BLM.

Dr. Yen was one of Contestees' assayers to whom BLM sent a number of "blind" samples of known blanks and standards to assess their competence (Tr. v. 39:5804-10). Dr. Yen reported values that "bore no real resemblance to reality" and "were wildly inaccurate" (Tr. v. 39:5807).

His results also suggest that he was purposely favoring Contestees. For example, for one blank sample identified as originating from the Mijo claims, he reported silver ranging in value from 0.47 to 0.923 oz/ton depending on the type of analysis, but for a split of the same sample marked as a blank he reported silver at average crustal abundance levels regardless of the type of analysis he employed (Tr. v. 39:5807-08; Ex.54, p. 5).

Ex. A-129, No. 32-Sampler: Moore,
Assayer: Chauncey Assay Laboratories (van Engelen)

Data set 32 is assay results ranging from 0.013 to 0.13 ounces of gold per ton for splits of three samples reportedly taken by Mr. Moore and submitted for assay to John van Engelen, then doing business as Chauncey Assay Laboratories (Tr. v. 22:2709; v. 28:3766-67). The three samples were taken from CSR drill hole No. 2, John No. 2 Hole, and the Mijo 16/17 corner and splits thereof were also sent to Dr. Yen, whose assay results are reported in data sets 33, 31, and 30, respectively (Tr. v. 22:2606, 2709; Ex. A-129, p. 32-2).

The probative value of Data set 32 is limited for several reasons. For the two samples taken from the John No. 2 Hole and Mijo 16/17 corner, the sampling and processing protocol are unknown. Also, the John No. 2 Hole is not on the Mijo claims. For the remaining sample, CSR hole No. 2, the weight of the excavated material is unknown, and the sample was taken from a container stored in an apparently unsecured facility for over a year (since February 1999) (Tr. v. 21:2454-55; v. 23:2816, 2845).¹⁷

In addition, a comparison of Mr. van Engelen's results with Dr. Yen's results on splits of the same samples demonstrates great variability between the two indicating that either one or both of their results are unreliable. This is illustrated by considering the results of the scorification assays they performed on the samples from CSR hole No. 2 and John No. 2. For the CSR sample, Mr. van Engelen reports approximately twice the value that Dr. Yen reported, and for the John No. 2 sample, Mr. van Engelen reports approximately five times the value

¹⁷In an apparent attempt to establish that the container was tamper proof, Contestees adduced some testimony as to the difficulty of opening the container, but this is unpersuasive. The buckets in which the samples were stored obviously were the typical plastic five gallon buckets used for a variety of industrial purposes with lids that simply snap on and off. There is no evidence that Contestees used any special device on the buckets to ensure no tampering.

(compare Ex. A-129, p. 32-1 (samples one and two) with id., pp. 33, 33-1 (sample one) and id., pp. 31, 31-1 (sample two)).

Moreover, the evidence of Mr. van Engelen's education, training, experience, and methods is sketchy and somewhat troublesome. Mr. van Engelen uses a stamp on his assay certificates that says "chartered chemist" (Ex. A-129, p. 32-1). Messrs. Guay, Henderson, and Matheson all spoke of Mr. van Engelen as being approved, accepted, or recognized by the Toronto Stock Exchange (Exchange) when he was working at Assayers Ontario (Tr. v. 3:658-59; v. 5:56; v. 33:4851-52). Dr. Guay explained that the Exchange recognizes Mr. van Engelen as a registered assayer and that he has 40 years of experience running his own lab (Tr. v. 5:56).

However, his latest lab, Chauncey Assay Laboratories, has closed down and his last known place of employment was Naxos (Tr. v. 33:4848, 4850-51; v. 39:5821-22). As previously mentioned, the Alberta Stock Exchange commissioned a report which reached unfavorable conclusions about Mr. White's assay work at the lab used by Naxos in 1996 (Ex. 80).

Further, he did not use a standard fire assay method but, rather, a scorification and a parr bomb (Ex. A-129, p. 32-1). Scorification is inherently less accurate than a standard fire assay (Tr. v. 35:5134, 5144-45; v. 36:5323-32; v. 38:3718-22). Also, according to Mr. Matheson, Mr. van Engelen could not detect gold in the Mijo material until Mr. Henderson taught him how to do so (Tr. v. 33:4848-51). Given that Mr. Henderson is unreliable, any reliance upon his methods would be cause for concern and it is not clear precisely how Mr. van Engelen processed the material.

Ex. A-129, No. 33–Sampler: Moore, Assayer: Queen's University (Yen)

As discussed above, data set 33 is the result of Dr. Yen's assay of a sample submitted by Mr. Moore that was originally taken during the CSR drilling program (Tr. v. 22:2606, 2710; v. 28:3768-69). This data set lacks probative value because the sample was stored at an unsecured facility, the weight of the excavated material is unknown, and Dr. Yen is not a reliable assayer.

Ex. A-129, No. 34–Sampler: Matheson/Moore, Assayer: Ager

Data set 34 (0.128 gold oz./ton of head ore or 0.44 gold oz./ton of screened material) was generated from a sample reportedly taken by Messrs. Matheson and Moore from the Mijo 16/17 corner and analyzed by Dr. Ager, who displayed at hearing a vial of purported gold recovered from the sample (Tr. v. 17:2969-70, 3008-12; v. 18:3125-26; v. 22:2655, 2710-11; v. 41:6216, 6239). The sample was screened to a minus-¼-inch fraction, that fraction was weighed and then screened to minus 20 mesh, resulting in a 52.75 pound sample being sent to Dr. Ager (Tr. v. 17:2970; v. 19:3448). Dr. Ager applied to the sample an extraction methodology which he claims is proprietary and would not reveal (Tr. v. 19:3450-52). Mr. Matheson identified the method to be a leach but provided no further detail (Tr. v. 22:2711). Nor did Contestees provide an assay report. This data set lacks probative weight because the record contains only an

estimate of the weight of the excavated material (Ex. A-129, pp. 34-1, 34-3), there is no assay report or description of the assay/analysis performed, and Dr. Ager is less than credible.

Ex. A-129, Nos. 35 and 36–Sampler: Moore,
Assayer: Chauncey Assay Laboratories (van Engelen)

Data sets 35 and 36 are assay results for a sample reportedly taken by Mr. Moore on February 2, 2001, at the Mijo 16/17 corner, prepared at Mr. Vincent’s old lab, and fire assayed by Mr. van Engelen at a lab in Death Valley Junction, California, presumably Naxos’ lab (Tr. v. 22:2714-15; v. 28:3769-70 v. 33:4841-50; v. 39:5821-22). The conditions at Naxos’ lab and Mr. Vincent’s old lab during the processing of the sample were not discussed, but the conditions in prior years were conducive to contamination problems (Exs. 37, 80).

The sample preparation consisted of Messrs. Matheson and Roe screening the sample to minus 20 mesh, which Mr. Matheson estimated to be one quarter of the weight of the excavated material (Tr. v. 33:4842). They then prepared splits of the sample, with one being subjected to a hydrochloric wash, one to a proprietary leach labeled as a “roast”, and one being left untouched (Tr. v. 33:4842-43).

Mr. van Engelen then conducted two sets of fire assays on the splits, one on February 7, 2001 (data set 35) and one on March 26, 2001 (data set 36), because Mr. Matheson wanted to test whether assay results on fresh samples would be greater than those on samples analyzed six weeks later (Tr. v. 33:4842-43). The reported assay results for gold in ounces per ton vary substantially for two of the three split types as follows:

Assay Date	Untouched Split	Hydrochloride Split	Leach (Roast) Split
36928	0.059	0.054	0.062
36975	0.091	0.054	0.146

These data sets lack probative value because the sampling protocol and identity and conditions at Mr. Vincent’s old lab and the Death Valley Junction lab are, at best, unknown, Mr. van Engelen’s experience, qualifications, and methods are sketchy, and his results are inconsistent not only with those of Dr. Yen, but also internally, as they vary substantially on splits of the same sample.

Ex. A-160--Sampler: Matheson, Assayer: Vincent

Exhibit A-160 is reportedly the assay results of two samples taken by Mr. Matheson and assayed by Mr. Vincent (Tr. v. 31:4245-56; v. 32:4615-23). Sample 21861-1 was taken from the material excavated from the John No. 1 Hole and left in a pile next to the filled-in hole (*id.*). It was screened to minus 1/8-inch, which Mr. Matheson estimated to weigh one-quarter of the sample taken (Tr. v. 32:4621-22). The reported gold value of 3.47 oz./ton actually refers to

ounces per ton of material screened to minus 1/8-inch (Tr. v. 32:4621-22). Sample 21861-2 was taken from material one to two feet below the surface next to the pile and screened to minus 1/4-inch (Tr. v. 31:4250; v. 32:4622-23). This data set lacks probative value because the sample sites are likely not on the subject claims, the weight of the excavated material is unknown, there is no assay report, and Contestees have not shown that Mr. Vincent was a qualified, competent assayer.

Other Evidence of Mineralization

The record contains other evidence of post-segregation sampling and assaying, but none of it is significant. Most of the assay results are duplicative of data in Exhibit A-129 which have already been discussed (see, e.g., Ex. A-141; Ex. 2, Atts. 9-1b thru 9-3a3, 9-4a, 9-4b, 9-5). Other results are from samples taken outside the Mijo claims (see, e.g., Ex. A-58; Tr. v. 8:1513-14).

Exhibit A-140 is an assay certificate which is not duplicative and is for a sample from the Mijo claims. It shows 0.807 gold ounces per assay ton for a sample from the Mijo 16/17 corner processed by Mr. White using a thiourea leach (Ex. A-140; Tr. v. 29:3872-75). However, that assay result lacks probative weight because the only evidence of the sampling procedure and weight is found in the hearsay assay certificate, because the chain of custody for this sample was not discussed, and because Mr. White's assay results cannot be considered reliable.

3.

Contestees' Allegations Of Bias, Impropriety, And Unfairness Do Not Alter The Conclusion That The Claims Are Invalid

At hearing and in Contestees' posthearing briefs, Mr. Matheson has alleged that BLM personnel are biased, have acted improperly or in bad faith, and have unfairly prevented him from establishing the existence of a discovery on the Mijo claims. Before addressing his allegations, it is worth noting that Mr. Matheson has not adequately explained why many of the allegations are relevant or material to the issue of discovery.

Generally, such allegations of bias, impropriety, or unfairness may be material if they bear upon the probativeness of evidence adduced at hearing, the fairness of the hearing, or the existence of exculpatory or equitable factors which might justify the grant of a further opportunity to prove the existence of a discovery. As more fully discussed below, Mr. Matheson's allegations are immaterial and/or not supported by the record.

To the extent, if any, that Mr. Matheson is questioning the motivation of BLM in initiating a contest against the Mijo claims, its motivation is irrelevant. United States v. LeFaivre, 138 IBLA 60, 65 n.5 (1997). Further, BLM employees are not disqualified as witnesses nor is their credibility undermined merely because of their status as BLM employees. Id. at 68. Rather, their testimony is subject to the same consideration and evaluation as that

proffered by any other individual and such weight is accorded to it as the trier of fact deems warranted. Id.

Contestees take issue with BLM action or inaction from 1998 onward. They allege that BLM should have attempted or allowed Contestees the opportunity to reconcile the disparate assay data in the Mineral Report by conducting a joint sampling and assaying and/or by permitting Contestees and their assayers to review the report and discuss it with BLM before the report was issued.

Relatedly, Contestees argue that the mineral examiners' "lying", that is, their marking of blank samples from their residences' yards as samples from the Mijo claims, "prevented the Contestees from knowing there was an assay problem. It also prevented the Contestees from solving the assay problem by conclusively demonstrating for the Contestant's experts assaying procedures necessary for the extraction and assay for the Mijo ore in the manner described by Dr. Guay in his letter to Mr. Abbey." (Contestees' reply brief at 52).

That letter (Ex. 2, Att. 11B-2a thru 11B-2e) states: "In order to satisfy the BLM's requirements that assay information be uncontaminated I suggest that the BLM use procedures that are being done by a laboratory which is capable of assaying these complex ores." Dr. Guay then suggests that BLM prepare Mijo samples in accordance with Mr. Matheson's instructions, provide those samples and blank samples to one of Contestees' preferred assayers, observe the processing of the sample, and insure that the facility remains locked and secure.

Contestees also allege that it was unfair for BLM to suspend Pass Minerals plan of operations in April 1999 after Mr. Mur told Mr. Matheson that BLM was not going to respond to his request in January 1998 to conduct a mineral examination. According to Contestees, this led Pass Minerals to determine that "there was 'tacit approval' for Discovery and [to] proceed[] to grade the mine site, install roads and culverts and put \$3,500,000 of equipment onto the mine site." (Contestees' opening brief at 9) Contestees assert that the suspension of the plan was improper because an adequate bond had been filed and because BLM should have issued a notice of non-compliance prior to suspension. They contend that the suspension and BLM's refusal to enter into an escrow agreement effectively shut down their operations and the EII pilot plant, thwarting their plans to prove discovery by enlisting Bonanza or CSR to extract material and Mr. Gunnison to refine it for gold at the EII plant.

In past cases the IBLA has ordered, and approved actions of Administrative Law Judges ordering, joint sampling and/or reopening of a hearing after the case has been submitted. See, e.g., United States v. Gassaway, 43 IBLA 382, 386 (1979); United States v. Lauch, 9 IBLA 60, 66 (1973). While Contestees have not requested such actions in their posthearing briefs, relevant case law suggests that it may be appropriate for an Administrative Law Judge to take such action, even in the absence of a request, if it would better serve the ends of justice. See, e.g., id. In the instant matter, in light of the explanation herein, an order for either joint sampling or reopening is not shown to be justified.

Potentially relevant precedent indicates that an Administrative Law Judge may be precluded from declaring a mining claim void for lack of a discovery when it is shown that the Government prevented the claimant from entering its claim to gather the information necessary to prove the existence of a discovery. See Mavros, 122 IBLA at 310; Parker, 91 I.D. at 294; United States v. Pool, 78 IBLA 215, 225 (1984). Under such circumstances, it may be appropriate to allow the claimant to gather the information and present it at further hearing.

This principle usually comes into play when a mining claimant argues that it was prevented from sampling a claim to confirm the existence of a discovery and/or that it should be afforded a further opportunity to so sample. This situation typically arises where the claimed land was withdrawn from mineral entry after the alleged discovery was made and the Government exercises its regulatory authority to impose restrictions on the claimant's use of the land.

Although the withdrawal of land entitles the Government to restrict the development of a claim, restrictions must be reasonable "in order to permit a claimant a fair opportunity to make [its] case." United States v. Niece, 77 IBLA 205, 207-08 n.3 (1983). Prohibiting road building or actual mining operations, as opposed to investigation to prove a pre-existing discovery, is a proper exercise of the Government's regulatory authority. Collord, 128 IBLA at 290; see also United States v. Mineco, 127 IBLA 181, 189 (1993).

While assays and sampling may be allowed even after a withdrawal to confirm a discovery made prior to withdrawal, it is still incumbent upon the claimant to make diligent efforts to assemble such information as would support the claim's validity. United States v. Porter, 37 IBLA 313, 316 (1978). After hearing, a claimant may be permitted to conduct additional sampling only where exculpatory or equitable factors justify the grant of a further opportunity to prove the existence of a discovery. See United States v. Porter, 37 IBLA 313, 316 (1978); United States v. Foresyth, 15 IBLA 43 (1974).

Also, further hearing will not be afforded where nothing has been submitted which suggests that another hearing would be productive of a different result, *i.e.*, a finding that a valuable mineral deposit has been discovered on a mining claim. United States v. Johnson, 33 IBLA 121 (1977); United States v. MacIver, 20 IBLA 352 (1975). United States v. Lost Polack Mining Assoc., 38 IBLA 101, 102-04 (1978). Contestees have not shown that they were unreasonably denied a fair opportunity to prove the existence of a discovery, that exculpatory or equitable factors exist to justify granting them further opportunity to do so, that such a grant would be productive of a different result or better serve the ends of justice.

The apparent assumption behind Contestees' arguments regarding reconciliation of the disparate data by joint sampling or other means is that attempted reconciliation might have or would have resulted in BLM not contesting the claims (*see, e.g.*, Tr. v. 22:2630) and/or the adducement of evidence establishing that a discovery was made. That assumption is, at best, speculative; and speculation as to what actions BLM might have taken are irrelevant to the issue of whether Contestees have met their burden of showing that a discovery was made or whether

Contestees should be afforded further opportunity to prove a discovery.

In support of their arguments, Contestees reference the testimony of Roger Haskins, BLM's Senior Specialist, Mining Law Adjudication, at its national headquarters. Mr. Haskins testified that joint sampling was a reasonable option and that an effort to reconcile should generally be made (Tr. v. 11:1923; v. 12:2076-80). However, he also testified that sampling involving joint custody is contrary to BLM policy, that there is no BLM policy that examiners should attempt to reconcile disparate results, that the mineral examiners must exercise their judgment as to whether reconciliation should be pursued, and that he did not think that Contestees had been dealt with unfairly (Tr. v. 11:1920-23; 2110, 2136-37, 2145-46, 2160-62).

The mineral examiners cogently explained that they were not confident of maintaining control over the samples and lab conditions so that joint sampling and assaying might provide Contestees another opportunity to produce "false" results and then ascribe them to BLM (Tr. v. 36:5370, 5418; v. 39:5893-94). They also noted that a near equivalent to joint sampling had already occurred in that the parties had assayed samples from the same locations and splits of the same samples, and that assaying, not sampling, was the crux of the disparate assay results, with Contestees' assayers producing widely varying results from splits of the same samples (Tr. v. 2:416-17; 35:5187-90, 5242).

Their fears are understandable, given the generally poor lab conditions, techniques, and reputations of Contestees' preferred assayers and at least one instance of salting a sample (Mr. Henderson adding silver) without immediate detection by the mineral examiners while they were observing the assay process. Even if some or all of these potentially corrupting influences could be eliminated by careful structuring of the joint sampling and assaying process, it is reasonable for the mineral examiners, BLM, and this tribunal to conclude that joint sampling and assaying is not necessary nor advisable and that Contestees need not otherwise be afforded further opportunity to prove a discovery.

This conclusion is based, in large part, upon Contestant's presentation of credible and persuasive evidence that the precious metals levels on the Mijo claims are generally less than the detection limits of various assay analyses. That evidence substantially outweighs Contestees' evidence to the contrary because its probative value is generally low for a variety of reasons discussed herein.

One major reason is that Contestees' preferred assayers did not come close to accurately assaying blanks and standards. BLM's submission to them of the blanks and standards was consistent with Dr. Guay's suggestion to address BLM's contamination concerns (Ex. 2, p. 27).

To further address those concerns and the disparity between the parties' assay results, BLM adopted Dr. Guay's suggestion to follow the assay procedures used by Contestees' preferred assayers. Mr. Lewis was retained to learn and use the scorification technique Mr. Henderson claimed could reliably assay Mijo material. Mr. Lewis then performed both Mr. Henderson's procedure and a standard fire assay on splits of samples (blanks, standards, and

Mijo material). Mr. Lewis' found no anomalous precious metal levels in the Mijo samples, using both Mr. Henderson's scorification procedure and a standard fire assay on the splits, and the results were, in general, identical within small amounts of variation and within the degree of the difference in detection limits.

Also, Dr. Pray was asked to assay Mijo material following Mr. White's purportedly proprietary thiourea leach process. The assay results are of limited use because Mr. White neglected to include an oxidizer in his description of the process. Nevertheless, Dr. Pray also conducted normal thiourea leach testing (with an oxidizer) which, according to Contestees' own witnesses, will detect gold in the Mijo material, yet no gold nor silver above average crustal abundance was found.

Despite this evidence, Contestees have argued that Contestant failed to overcome their evidence that certain processes, such as the thiourea leaching or repetitive fusion of the slags and cupels, will successfully detect or recover precious metals in the Mijo material because Contestant did not test those processes. For this proposition, they rely on United States v. Williams, 65 IBLA 346, 351 (1982) (see, e.g., Tr. v. 22:2531-34; v. 41:6286-87).¹⁸

In Williams, the IBLA upheld a dismissal of a mining claim contest where the mining claimant presented evidence of the recovery of gold by suction dredging. The IBLA found that that evidence overcame the Government's prima facie case because it was based on evidence concerning the insufficiency of mining techniques other than suction dredging. 65 IBLA at 351. This case is readily distinguished on a number of grounds.

First, in Williams, there was no dispute that the claim at issue contained gold; the issue was whether the gold could be recovered economically. In the instant case, Contestant has vigorously disputed the presence of anomalous levels of precious metals and proven that the Mijo claims contain insignificant amounts of precious metals.

Second, in Williams, there was no question that a conventional processing method, dredging, would produce gold if it existed. Here, Contestees have failed to carry their burden of proof to show that their processing methods, most of which are unconventional and/or not fully disclosed, will, in fact, detect or produce precious metals when conventional methods will not.

Finally, in Williams, the claimants' evidence showing they economically recovered gold (using a dredge) was un rebutted. Here, Contestant's evidence of the lack of mineralization, including assays from following two of Contestees' championed procedures (the scorification technique and thiourea leach process), greatly outweighs Contestees' evidence that they found economic mineralization.

¹⁸Contestees also cite to United States v. Wharton, 514 F.2d 406 (9th Cir. 1975). That case is inapposite. It addresses the elements for establishing estoppel against the Government and Contestees have not cogently argued nor shown that estoppel applies in the present case.

In support of their argument that BLM should have reassayed the slags and cupels, Contestees refer to books, including “The Metallurgy of Gold”, by Sir T.K. Rose, and “The Sampling and Assay of the Precious Metals”, by E.A. Smith. They also reference the following statement in the Mineral Report: “It is normal laboratory practice to assay the slag and cupel from a fire assay one time (Bacon, et al, 1989). This allows the assayer to determine the amount of precious metals lost into the slag and cupel.” (Ex. 2, p. 30)

Mr. Clay explained that he regretted using that phraseology in the Mineral Report because it is misleading, as an assay of the slag or cupel is (1) rare, (2) generally needed only if visual inspection of the slag indicates that there was a problem, (3) otherwise potentially worthwhile in very limited circumstances, typically when assaying rich ores, because the loss of precious metals to the slag or cupel rarely exceeds a few percent, and (4) performed once, not multiple times, in the rare instances when it is used (Tr. v. 35:5159-64; v. 36:5352-55). This was the consensus of Contestant’s other experts, and even Contestees’ own witnesses acknowledged that multiple refirings are unusual (Tr. v. 18:3215) and that there is nothing in the literature supporting the proposition that 100% of any gold would be lost in the slag (Tr. v. 5:220-24, 306-07).

Mr. Clay emphasized that the unfortunate phraseology is an incomplete quote of language which does not advocate the practice of repetitive assaying of slags and cupels (id.). The Mineral Report explains the drawbacks of the practice as follows:

The amount of gold and silver added to a sample by litharge and inquarts is insignificant when a fire assay is completed under normal practice. However, the continued and repeated addition of litharge and inquarts as was done in White’s slag and cupel multiple reanalysis, plus any cross-contamination from dust[,] will eventually accumulate enough gold and silver to become measurable (Lewis, 1999, personal communication). * * * The error will be insignificant where the sample actually contains multiple-ounce per ton concentrations of gold and silver, but will portray false values when the samples are actually barren.

Ex. 2, p. 30). Those drawbacks were reiterated by Contestant’s other experts.

Contestees generally did not dispute this phenomenon or explain how their assayers’ methodologies avoided it, except providing testimony that some of the inquarts were known to be free of impurities. In fact, the sloppy lab conditions and techniques of several of those assayers would tend to exacerbate any contamination problems.

Mr. Clay addressed the books cited by Contestees, noting that the book by Mr. Rose supports his position that visual inspection is sufficient to determine whether there’s a problem with precious metals reporting to the slag (Tr. v. 35:5159-61; v. 36:5357-59). As for the book by Mr. Smith, Mr. Clay testified that that book supported his position that, at most, only a small percentage of the precious metals will report to the slag so that it might be worthwhile to further treat the slag for rich ores but not poor ores (Tr. v. 35:5162-63; v. 36:5359-62). The publication

authored by W. G. Bacon and others and cited in the Mineral Report also notes that visual cues are relied upon to detect problems in the fusion or cupellation, that a single assay of the slag and cupel may be appropriate to account for minor losses thereto, especially as an initial check of potential losses when assaying high grade ores, but that if the precious metals in any repetitive assay of the slag and cupel are more than five percent of the precious metals detected in the first assay, then the repetitive assay is fraudulent (Ex. 8, pp. 32-35).

All or most of Contestees' repetitive assay results fall into the "fraudulent" category, which may merely evidence incompetency rather than fraud. Ultimately, Contestant's assays using instrumental techniques showed that there was no anomalous gold to be lost in the slag or cupel.

Given that showing, Contestees' contentions regarding adjustment of the fire assay flux are also of little import. Contestees state that there is no evidence that Contestant's assayers adjusted their standard fluxes, implying that adjustments were necessary to achieve a proper fusion of the allegedly refractory and complex Mijo material. Contestees also appear to argue that a spectrographic analysis is necessary to adjust the flux to make a standard fire assay reliable, citing Exhibit 41, a U.S. Geological Survey publication on assaying.

Actually, Dr. Pray did conduct a "high-flux" fire assay for which the sample to flux ratio was 1 to 20 and he still found no anomalous gold in the Mijo material (Tr. v. 39:5903). As for Exhibit 41, it recommends an "emission spectrographic analysis" in order to assure a "maximum recovery" (Ex. 41, p. 6), but it does not state that such an analysis is either necessary nor warranted as a standard protocol.

In fact, the standard industry practice is to adjust the flux based on a visual assessment of the sample and fusion process (Tr. v. 2:433-34; v. 37:5467-69, 5553-55; v. 38:5668-71; Ex. 8, p. 32) and modification of the standard flux is only rarely necessary (Tr. v. 39:5929). Contestees have not shown that it was necessary for Contestant's assayers to do so.

Contestant's experts explained that the composition of the Mijo material does not pose problems for the standard fire assay and the consistent, non-anomalous assay results using a variety of techniques confirms this. Further, assuming, arguendo, that the flux did require some adjustment, the loss of gold to the slag is likely to be minor (Tr. v. 15:259-63; 37:5471) and certainly not 100% or close thereto (see, e.g., Tr. v. 5:220-24, 306-07), contrary to the assertions of many of Contestees' witnesses.¹⁹

¹⁹The amount of trial and error necessary to achieve an acceptable result would depend upon the competency of the assayer (Tr. v. 38:5711-13), and the large amount of testing conducted by Mr. Phebus and perhaps others suggests a lack of competency (see Tr. v. 37:5515-16).

Although Contestees argue otherwise, the facts that Mr. Matheson requested a joint sampling in January 1998 and that Mr. Mur told him that BLM would not respond to the request are of no consequence. Contestees argue that the suspension of their plan of operations was unfair because Pass Minerals interpreted those facts as constituting “‘tacit approval’ for discovery and proceeded to grade the mine site, install roads and culverts and put \$3,500,000 worth of equipment onto the mine site.”

As discussed below, the alleged unfairness of the suspension of the plan of operations is a red herring. Further, Contestees mischaracterize the alleged reliance upon Mr. Mur’s statement in three respects.

First, they misinterpret the January 1998 request as a request for a mineral examination when, in fact, it was a request for a joint sampling. Second, they misidentify Pass Minerals as the entity which performed the referenced tasks when, in fact, Bonanza performed the work at its cost and to primarily serve its purposes (see, e.g., Tr. v. 8:1427-28; v. 22:2579-82; v. 23:2844; Ex. A-38). Third, the record does not show any reliance upon Mr. Mur’s statement in making the decision to contract with Bonanza or to perform the referenced tasks. To the extent, if any, that Contestees are arguing that Contestant should be estopped from challenging the Mijo claims based upon lack of discovery, they have not shown that the elements of estoppel exist. See, e.g., James A. Becker, 138 IBLA 347, 350-51 (1997).

Contestees make much of the fact that this Tribunal suggested during the hearing that joint sampling and assaying be conducted. However, it is now clear, after presentation of Contestant’s rebuttal evidence and adequate time to review and consider the entire voluminous record, that there is no serious question as to the lack of discovery of a valuable mineral deposit.

Further, it is clear that Contestees were not unreasonably denied a fair opportunity to sample and assay material and otherwise prove a discovery on the Mijo claims. From 1983, when the claims were located, to 1999, when the plan of operations was suspended, Contestees, their co-developers, and predecessors-in-interest were able to access and develop the claims without substantial interference from the Government.

During the suspension, Contestees could have undertaken development pursuant to their mining notice (Ex. 46) without BLM approval so long as they would not disturb more than five acres. 43 C.F.R. § 3809.1-3 (cf. Tr. v. 38:5741). The feasibility of this course of action is supported by Mr. Matheson’s own testimony that he contemplated proving the validity of each of the Paiute Valley claims by operating on five acres or less, processing the material at the Mijo claims, and sending it elsewhere for refining (Tr. v. 23:2870-71).

Once the suspension was lifted in July of 2000, they were again free to develop the claims under the plan. From 1983 to the conclusion of the hearing, there was ample opportunity to gather evidence necessary to prove a discovery.

This fact is confirmed by Contestees’ evidence of sampling and development. If

accepted at face value, that evidence shows that thousands of samples from all over the Mijo claims were processed for gold from the time Mr. Matheson became involved in development of the claims in the late 1980's until suspension of the plan of operations. If Mr. Matheson and his co-developers followed proper procedures and kept adequate records and if commercial gold is truly present, then Contestees ought to be able to prove a discovery from such an extensive body of sampling evidence.

With regard to record keeping, Mr. Phebus testified that he was concerned not with recording precise precious metal values but with improving the processing equipment and methods and producing precious metals. He did not consider himself to be an assayer, relied upon others to a large extent to conduct the assays, and depended upon others to record the assay data, either in assay sheets or lab books.

Gene Smith was in charge of quality control and kept the lab books, which reportedly included both assay data and sampling locations. Those lab books were not adduced at hearing.

Indeed, no records were adduced at hearing for the vast majority of the samples. For those samples, the assay results were not presented or were stated as approximate numeric averages of results from an indefinite number of samples, with no information about each sample, so that the testimony carries little or no probative worth. The assay results for samples for which records and/or more detailed testimony was provided were not sufficient to overcome the Government's prima facie case and establish the validity of their claims, as discussed above.

Because it is Contestees' obligation to prove the validity of their claims, it is their responsibility to keep and present records adequate to demonstrate their assertions, United States v. Boyle, A-30922, 76 I.D. 318, 324 (1969), and they cannot expect their default to establish the validity of their claims, United States v. Barrows, A-31023, 76 I.D. 299, 312 (1969), or to justify granting them further opportunity to prove a discovery. See United States v. Porter, 37 IBLA 313, 316 (1978). The fact that their scheme to refine material through the EII pilot plant may have been frustrated by the plan suspension and/or the denial of an escrow agreement is a red herring because, among other reasons, they had ample opportunity to prove a discovery, despite the suspension and escrow denial.

Contestees do not contend, nor do the facts show, that they were denied fair opportunity to sample to define the quality and quantity of precious metals in the alleged ore body. Rather, they contend that they were unfairly thwarted from refining the material to provide "conclusive proof of discovery."

The underlying assumption is that equity and fairness dictate that refining be allowed to prove a discovery. This assumption is not correct.

Sampling and assaying are proven methods of determining the quality and quantity of mineralization. Despite Contestees' assertions to the contrary, the great weight of the evidence shows that the Mijo material can be reliably assayed by various methods and therefore that

refining is not necessary to prove a discovery. Having had fair opportunity to prove a discovery by sampling and assaying, Contestees are not entitled to another bite at the apple.

Further, the EII pilot plant, as designed and constructed, was not capable of recovering gold and silver at the contemplated refining rate and grind of 2 tons per hour and 400 mesh, respectively (Ex. 73; Ex. 2, pp. 8-9; Tr. v. 1:179-80, 211-12; v. 5:256-57; v. 40:6047, 6062-65, 6071-72, 6099). Mr. Jucevic testified that he found the plant "amateurish" (Tr. v. 40:6096), stating, "There's no way I could see that it would have operated for three days, probably not even for three hours" (Tr. v. 40:6099). Estimated additional investment of \$21,000 to \$210,000 or more would have been necessary to correct the problems before it could have operated as contemplated (Ex. 73; Tr. v. 6062-65; see also Tr. v. 1:179-80, 211-12; v. 5:256-57; v. 40:6047, 6050-51, 6071-72).²⁰

According to the testimony of Contestees' own witnesses, the material could have been refined elsewhere. As far back as 1990 and 1991, Mr. Phebus was purportedly producing dore bars and anode mud without leaching, using 250 pound samples, a standard flux, and standard smelting procedures at the Becki M mill site. He claims to have further refined the bars in 1998 in Canada before selling one of the bars for over \$12,000 Canadian. If this claim is true and if records or other information had been provided to adequately detail the process from sampling to sale, Contestees would already have at least some substantial probative evidence of gold production.

Mr. Phebus testified that he knew what was needed to develop a system for refining the Mijo material but that his plans for such a system were frustrated because the claim developers ran out of money in 28 months (i.e., by sometime in 1992) before they acquired the necessary permits and equipment, including furnaces. He testified that the system was similar to that used by Mr. Gunnison, except that Mr. Phebus did not like using the belt filter because the material caked up, resulting in loss of precious metals and the need to frequently shutdown the system to clean it. The jist of his testimony is that there are several ways of refining the material, that the best method includes use of a thiourea leach, and that they lacked money to develop a pilot plant capable of handling larger quantities. (See, e.g., Tr. v. 29:3988-94)

Although the Becki M mill site setup was not ideal because of its lower volume capacity (one to five tons per day), that setup could have been returned to a status capable of producing dore bars by installing the belt filter and a few other pieces of equipment, including a large furnace, according to Mr. Phebus (Tr. v. 6:859-62, 992-98, 1003-06; v. 7:1039-54; Tr. v. 6055).

²⁰Some of the potential problems with EII's plant identified by the mineral examiners in the Government's case-in-chief, such as the mounting of equipment on wood, the absence of an air quality permit, and the questionable availability of the local landfill as a depository for the tailings, may not be problematic (see, e.g., Tr. v. 14:85, 96-97; v. 22:2586, 2589-90). Nevertheless, other problems remain.

To add these items and upgrade the test facility with settling ponds, a complete lab facility, and other equipment to make it more production oriented would cost approximately \$200,000, according to Mr. Phebus (Tr. v. 6:959-62, 997-98). The estimate was based upon the assumption that the furnace and other equipment would be bought.

A furnace rented from Mr. Henderson was used to produce the alleged dore bars in the early 1990's and the only explanation ever given as to why rental was not once again considered is Mr. Matheson's general statement that he did not wish to rent equipment. Mr. Clay pointed out that Contestees could have raised in less than one year over \$500,000 in capital for a larger capacity plant by processing material through the Becki M setup, assuming, arguendo, that the gold values exist as claimed by Contestees (Tr. v. 40:6053-55). If the gold values exist, the reinstallation of the belt filter and rental of a furnace appears to be a more realistic method of producing gold to raise further capital and/or prove a discovery.

Mr. Matheson testified regarding another low volume (about 20 pounds per hour) facility located in the Las Vegas area which was owned by Don Hall prior to his death in approximately 1998 (Tr. v. 14:17-18; v. 33:4757-68, 4777-78). According to Mr. Matheson, that facility had produced and was capable of producing gold buttons from Eldorado Valley material using a leach process (Tr. v. 33:4757-68, 4777-78).

By November of 1999, when the contest Complaint was issued, Contestees knew the contest charges and that their scheme for larger scale excavation and refining using a sand and gravel operator and EII, at little cost to Contestees, was not going forward. Mr. Matheson testified as to efforts to attract financing in various forms for larger scale extraction and refinement, but these efforts do not appear to be the most practical way of attempting to prove a discovery, especially in light of Contestees' historic inability to attract such financing and the likely chilling effect of the contest on potential financing. Their obligation to diligently gather information to prove a discovery would necessarily include focusing upon what was more readily accomplishable, such as the low volume facilities, rather than larger scale development, at least after the Complaint was issued.

Mr. Matheson focused repeated attention and criticism upon the mineral examiners' decision to mark some blanks as samples from the Mijo claims. He argues, among other things, that the mineral examiners acted unethically and deceptively and therefore that their evaluation of the Mijo claims cannot be trusted to be truthful and accurate.

Contestant correctly responded that the examiners' decision was dictated by the circumstances, and is neither unusual nor unethical. Messrs. Clay and Shumaker explained that they purposefully mislabeled some blanks to prevent Contestees and their assayers from suspecting that the samples were not from the Mijo claims, with the goal of determining whether Contestees' preferred assayers were reliable (Tr. v. 1:58-60, 62, 143-44, 146-147; v. 2:391-92). Messrs. Clay and Shumaker used material from their yards, rather than material such as silica

sand, because it best resembled material from the Mijo claims (Ex. 2, p. 27; Tr. v. 1:267-68; v. 1:167, 180-81; v. 2:366). This process showed that Messrs. White and Henderson and Dr. Jordan could not be relied upon because they reported value where none existed (Ex. 2, pp. 44-45; Tr. v. 1:62, 268-69; v. 12:2098, 2139, 2163).

This protocol was appropriate by BLM, mining industry, and professional standards. Roger Haskins, the senior mining law specialist who assists in formulating policy for BLM (Ex. 13; Tr. v. 11:1821), testified that the protocol used by the mineral examiners was acceptable and consistent with BLM policy (Tr. v. 11:1853-56, 1965, 1981-82; v. 12:2009-12, 2015, 2138-39, 2163; see also Ex. 7; Tr. v. 12:2106-07, 2137). Mr. Lewis, a reputable assayer with over 22 years of experience (Tr. v. 2:396-99, 432, 441; Ex. 11), testified that the protocol was prudent and not uncommon in the mining industry (Tr. v. 2:424; see also Tr. v. 2:400-01, 415-16, 430-31, 473). Substantial evidence in the record supports Mr. Lewis' conclusion (see, e.g., Ex. 9, pp. 13-14 (Nevada Bureau of Mines recommending the use of double blind studies to check assayer competence); Ex. 10, p. 6 (paper given at a mining industry meeting recommending submitting samples of known value as part of the sample stream from the property in question to catch quack assayers); Ex. 72, p. 2 (Jucevic stating that the protocol followed by the examiners "is an excellent example of a very professional job"); Tr. v. 37:5465-66 (Lechler testifying that the protocol used by the examiners "was a very good way of getting at what was going on" in a suspect lab and that the protocol is "not uncommon . . . in evaluating an analytical laboratory")). Contestees' own witness, Dr. Guay, suggested that the BLM employ essentially the protocol that the examiners followed (Ex. 2, p. 27, Att. IIB-2).

As a result of the mislabeling, Mr. Matheson filed a complaint against Mr. Shumaker with the American Institute of Professional Engineers (AIPG) (see Ex. 82), of which Mr. Shumaker is a member, and the AIPG dismissed the complaint as unmerited explaining, among other things, that the protocol employed by the examiners is normal (Tr. v. 26:3529-30). In fact, the Chairman of the Ethics Committee of the AIPG subsequently published an article in The Professional Geologist, a well-respected publication in the mining industry, addressing the exact issue raised by Mr. Matheson (Ex. 35). The article states that, although "the property owner is correct that the insertion of standards, blanks, and duplicates as if they were part of the regular sample stream can be viewed as a form of deception," the "deception is ethically allowed" for several reasons, including "quality assurance and quality control." Id.

In short, there is no basis to Contestees' arguments that the mineral examiners somehow acted improperly in substituting blanks for some of the samples from the Mijo claims. Thus, the substitution does not constitute a reason to suspect BLM's sampling, the assaying that was performed for BLM, the Mineral report, or the mineral examiners' testimony.

Contestees find fault with the mineral examiners in other respects, but that fault-finding likewise does not withstand scrutiny. According to Contestees, the mineral examiners "did not have sufficient training and the specialized experience to physically examine, sample and assay a

mining claim which was part of a 'new type' of deposit. * * * The Mineral Examiners failed to do a minimum level of investigation into a 'new type of deposit'." (Contestees' reply brief at 51-52)

In support of this argument, Contestees contend that the mineral examiners were not aware that the Department has already recognized this new type of deposit in a publication admitted as Exhibit A-193. That exhibit is not a Departmental publication but, rather, a peer-reviewed handbook prepared by the Society of Mining Engineers (SME) and merely sponsored by the Bureau of Mines when it still existed (Tr. v. 36:5382; v. 39:5857-58; 5952).

The pertinent portion of the handbook states under the subheading "Elusive Gold":

Gold in the form of clean free particles of micron size is present in certain rocks *
 * *
 * * * * *

Gold in similar free form, or in organic or inorganic compounds down to molecular size particles, undoubtedly occurs in alluvium. In none of these forms would gold be susceptible to cyanidation, because free particles in alluvium are coated with mineral salt and thus insulated from the solution, and compounds would not react. No reliable method of assay for gold in these forms is known at present. The presence of significant amounts of gold in certain unconsolidated sediments has been very strongly indicated from recent research. It is expected that a method of extraction will be developed, which may also be the first method of assay.

(Ex. A-193, pp. 17-157 to 17-158). Contestees argue that the mineral examiners failed to realize that Mijo claims contain a "new type of deposit" consisting of "elusive gold" for which no reliable method of assay is known and for which a method of extraction will be the first method of assay.

Contestant's witnesses effectively responded to Contestees' reliance upon the "Elusive Gold" subsection, with both mineral examiners pointed out that that subsection is found in an outdated version of the handbook (Tr. v. 36:5298-300, 5382; v. 39:5857-58; v. 40:6056). The current edition of the handbook no longer references elusive gold or contains such language (Tr. v. 36:5298-302; v. 39:5857-58; v. 40:6056), which is consistent with the testimony of Messrs. Clay, Lechler, and Jucevic. They disputed Contestees' contention that the subsection supports Contestees' position that a new type of deposit has been discovered and disagreed with the statements that there is no reliable method of assaying and that a method of extraction may be the first method of assay, opining that the former has no basis and that the latter is conjecture (Tr. v. 36:5298-300, 5382; v. 37:5560-61; v. 39:5857-58, 5862-64; v. 40:6056-58, 6108-09).

Contestees also claim that BLM failed to follow a provision on page IV-11 of its

Handbook for Mineral Examiners (H-3890-1) (March 17, 1989) (Ex. 14), which recommends the use of a 60-pound sample in a column percolation or bottle agitation cyanide leach test for micron-sized disseminated gold deposits that will be vat or heap leached. More generally, Contestees argue that BLM should have taken bulk samples.

However, the handbook provision on which Contestees rely is the protocol to estimate the recovery for an actual mine once the existence of micron gold is already established by assay (Tr. v. 35:5146-47; v. 36:5334-37). As discussed elsewhere, none of Contestant's analyses found gold beyond background concentrations, so the provision is inapposite (*id.*).

Dr. Guay did testify that for a placer deposit "there's no such thing as an assay * * * because the values are too scattered and they're too small [so that] your assay on a placer deposit would be probably something [on] the order of .01. * * * [N]obody does it. And what you have to do is go out and dig up cubic yards of material, run it through your recovery plant and see how much gold you collect." (Tr. v. 5:274)

Mr. Clay and Dr. Pray similarly acknowledged that there is not a reliable method of assay for a traditional placer deposit (Tr. v. 35:5176; v. 39:5754, 5757), but explained that the lack of reliability pertains to sampling error associated with taking small samples of material that likely contains gold in nugget form and which is erratically distributed (Tr. v. 35:5174-77; v. 39:5757-59). A fire assay will reliably detect whatever gold is in the sample (Tr. v. 36:5286, 5301; v. 39:5958).

To analyze a typical placer, bulk samples are taken and concentrated and then the black sands concentrate is amalgamated (Tr. v. 35:5174-76; Ex. 14, p. IV-10). The tailings may then be fire assayed to determine if any gold was missed (Tr. v. 5:7176-77). A true placer deposit (*i.e.*, a stream bed) is sampled and processed this way to obtain an accurate representation of the material, given that the gold is typically erratically distributed and may consist of large nuggets and that a standard fire assay may overestimate what is readily recoverable through gravity separation methods typically used on traditional placer deposits (Tr. v. 35:5174-77; v. 36:5286, 5298-301; Ex. 14, p. IV-10).

However, both Dr. Guay and Mr. Clay noted that the material in the Eldorado Valley does not constitute true placer material (Tr. v. 5:276; v. 35:5175, 5177). Rather, it is a sedimentary deposit which allegedly contains micron-size gold particles that are widely disseminated (Tr. v. 5:276; Tr. v. 35:5175, 5177). Consequently, smaller samples are appropriate (Tr. v. 35:5175, 5189-90; Ex. 8, pp. 30-32, 34).

Nevertheless, BLM did process two bulk samples weighing 2,500 and 2,300 pounds using the accepted placer method of concentration and then sent the concentrate to Legend for amalgamation and assay of the tailings (Ex. 2, pp. 23, 25-26). Also, Dr. Pray did a vat thiourea leach test using 10 kilogram samples of Mijo material (Ex. 41, p. 3). No anomalous gold values

were detected in any of these samples (Ex. 2, p. 26; Ex. 41, p. 3).

Contestees quote another provision from the mineral examiners' handbook recommending that black sands from placer material be assayed if a spectrographic analysis of the black sands reveals significant amounts of rare earths, platinum group elements, and certain other minerals (see Ex. 14, p. IV-10). However, Contestees do not explain the significance of this quote to the contest, especially given that the Mijo material is not true placer material. In any event, Contestant's experts conducted numerous analyses on Mijo material, including spectrographic examinations and assays of the tailings/black sands for two bulk samples, and they all showed no anomalous amounts of precious metals.

C.

Contestees Failed To Show The Quantity Of Reserves

Assuming, arguendo, that Contestees' have provided some probative evidence of precious metals above average crustal abundance, Contestees failed to demonstrate the quantity of precious metals on the Mijo claims. As the IBLA has stated, "Proof of quantity is crucial to establish the existence of a valuable mineral deposit." United States v. Bagwell, 143 IBLA 375, 391 (1998), citing Crowley, 124 IBLA at 385. "Isolated showings of high values of gold will not alone suffice to demonstrate the existence of a valuable mineral deposit." Id. at 391-92, citing Parker, 91 I.D. at 285-86; see also Bechthold, 25 IBLA at 88 ("Occasional high samples are not conclusive evidence of a valid discovery. Other factors must be considered, such as the extent of the mineral deposits . . ."). There must be evidence that the high values are sufficiently consistent to conclude "continuous mineralization, the quantity of which can be reasonably determined by standard geologic means." Bagwell, 143 IBLA at 391.

Mr. Matheson presented Exhibit A-134 as his "rough" layman estimates of the "minimum ore reserves" of gold on the Mijo claims based upon his assumption that the alleged deposit is homogenous (Tr. v. 23:2739-40, 2745). He estimated that the Mijo 16 and Mijo 17 claims contain tonnage of 3,000,000 and 600,000 , respectively, bearing gold at a minimum average grade of 0.10 ounces per ton (Ex. A-134). Exhibit A-134 indicates that the tonnage estimates were based upon the following figures:

	Mijo 16	Mijo 17
"Area Tested"	350 yd. x 350 yd.	350 yd. x 350 yd.
"Depth Tested"	16.6 yd. (0-100 ft. = 50 ft./avg.)	3.3 yd.
"Volume Tested"	(350)(350)(16.6) cu. yd.	(350)(350)(3.3) cu. yd.

"Tonnage"	$(350)(350)(16.6)(1.5) = 3,050,250$	$(350)(350)(3.3)(1.5) = 606,375$
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Exhibit A-134 suffers from several deficiencies. First, it was prepared by a layman, Mr. Matheson. Second, it amounts to a series of calculations based on unattributed values and measurements, as Mr. Matheson never explained his calculations.²¹ Third, it assumes every inch of the claims to a depth of 50 feet may be mined, which is physically impossible, given the need to achieve stable slopes leading down into the pit (see Tr. v. 40:6018-19). Fourth, it is based upon the unproven assumption that the alleged precious mineral deposit is uniformly distributed.

Dr. Ager also briefly testified regarding the volume of reserves, stating that 70 million tons is a good estimate of the tonnage of reserves, given the size of the claims (320 acres), a presumed thickness (depth) of 100 feet,²² and an assumed weight of 1.5 tons for each cubic yard (Tr. v. 19:3314). His testimony similarly lacks explanation as to why certain figures were used, including the 100 foot depth and the 1.5 tons for each cubic yard, and he also failed to address the grade of the material.

The testimony of Contestees' own witnesses, including Mr. Matheson, establish the falsity of his assumption that the alleged precious metal deposit on the Mijo claims is uniformly distributed (Tr. v. 23:2846-47). Mr. Matheson testified at one point that the values varied significantly on the Mijo claims, between .00 and 4.0 oz/ton, depending on the samples' relation to the "blue structures" (Tr. v. 23:2906-07).

He took the position that the head ore was homogeneous because it nearly always showed value, whereas the values for the concentrate (the magnetic portion of the screened material) varied more by location presumably because the magnetics were not uniformly dispersed (Tr. v. 31:4644-46; v. 32:4558-59, 4562-64). This testimony amounts to little more than a layman's hypothesis, as it is based upon a vague statement that the head ore nearly always showed value without supporting detail regarding the implied consistency of the head ore values.

Testimony from the other witnesses of Contestees precludes any conclusion that the values are consistent. For example, Mr. Henderson testified that, of the hundreds of assays he has performed on Mijo material, the results "jump all over the place," ranging in value from "nothing up to * * * 29 [ounces per ton]." (Tr. v. 3:702-03)

²¹The assumption of a 50 foot depth for the reserves presumably is based upon the fact that the seven holes drilled by Bonanza and CSR all penetrated to a depth of at least 50 feet.

²²The assumed depth of 100 feet presumably relates to the fact that the three CSR drill holes were bored to a depth of 100 feet, but those holes are too few in number to project over the entire 320 acres of the claims (see Tr. v. 40:6018).

Mr. Phebus testified that he performed thousands of analyses on samples taken across the claims to assess precious metal content, that the values “bounce all over the place”, that some of the tests showed no value, and that this could be indicative that precious metals were not found where the testing occurred or that “we’re out of the ore body.” (Tr. v. 3:761, 763; v. 30:4021-22). The “ore body” to which he referred is the “blue structures” that diagonally cross the north-east corner of the Mijo 16 claim (Tr. v. 3:888, 901; see also id.:889-90 (testifying the precious metal concentration varies in relationship to proximity to the “structure”)).

Mr. Moore testified similarly (Tr. v. 7:1133-34; v. 8:1341-42, 1404-09). At one point Mr. Moore appeared to admit that Contestees’ preferred method of extraction - Mr. Gunnison’s leach process - could not economically process material taken “off-structure” at the 2 tons per hour rate Contestees were contemplating; rather, the rate would have to be increased to “10,000 ton [sic] a day . . . to make the money,” given the “values” they were getting off-structure (Tr. v. 8:1405; see also Tr. v. 7:1119-21 (indicating that Mr. Gunnison’s recovery was less for samples taken off-structure)).

Others testified regarding variations throughout the Eldorado Valley, which are significant because of the repeated statements by Dr. Ager that the origins, geology, mineralogy, and response to metallurgical processes is similar for all the material in the valley (see, e.g., Tr. v. 17:3004, 3013-14; v. 18:3132-33, 3169-70, 3197-98, 3208; v. 19:3369-70; v. 20:3511-12). Dr. Guay, based on the data provided to him by Mr. Matheson and Dr. Ager, testified that one reason they were getting inconsistent assay results was that “the ore samples themselves vary from one part of the valley to the other.” (Tr. v. 5:80) In fact, Dr. Guay admitted that sampling was unpredictable because the data “from all over that valley show[] this big spread in numbers.” (Tr. v. 5:253). He opined that an average grade could not be calculated “because there’s too much scatter in [the] numbers.” (Tr. v. 5:311)

Dr. Ager similarly admitted that there are variations in vector and grade in Eldorado Valley (Tr. v. 19:3453-54). Indeed, with respect to the southern Eldorado Valley (the Mijo claims are in the northern end), he admitted that the grade of the alleged deposit is variable from foot to foot, and that one could find high values in one foot and no values in the next (Tr. v. 19:3374-75; see also Ex. 20; Tr. v. 17:3013-14).

Of course, in reality, the material on the claims is homogeneous, as the mineral examiners testified (see, e.g., Tr. v. 40:6028). However, this cannot be stretched into evidence that the alleged precious metal deposit is homogeneous. There is insufficient evidence to show that the homogeneity of the alluvial fill on the claims translates into a homogeneous precious metal deposit.

Thus, the testimony of Contestees’ own witnesses precludes any finding that Contestees have proved the extent of reserves. See, e.g., United States v. Clouser, 144 IBLA 110, 117 (1998) (rejecting a “geologic projection of a mineral deposit of any particular value” because of

“an erratic distribution of mineral values”). Therefore, even if some weight is given to Contestees’ assays, Contestees have failed to show a discovery.

CONCLUSION

Without further belaboring this Decision with additional references to contentions of fact and law, I hereby advise that all contentions submitted by the parties have been considered and, except to the extent they have been expressly or impliedly adopted herein, they are rejected on the ground they are, in whole or in part, contrary to the facts and law or are immaterial. Based upon the foregoing, the Mijo Nos. 16 and 17 placer mining claims are hereby declared invalid for failure to make a discovery of a valuable mineral deposit.


Harvey C. Sweitzer
Administrative Law Judge

APPEAL INFORMATION

Any party adversely affected by this decision has the right to appeal to the Interior Board of Land Appeals. The appeal must comply with the regulations set out in 43 C.F.R. Part 4 (see enclosed information pertaining to appeals procedures). Additionally, effective February 11, 2002, the Interior Board of Land Appeals has a new mailing address, as follows: 801 North Quincy Street, Suite 300, Arlington, Virginia 22203.

See page 95 for distribution.

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Distribution
By Certified Mail:

John W. Steiger, Esq
Office of the Field Solicitor
U.S. Department of the Interior
Suite 6201, Federal Building
125 South State Street
Salt Lake City, Utah 84138

K. Ian Matheson, President
Pass Minerals Inc.
Kiminco Inc.
Pilot Plant Inc.
2215 Lucerne Circle
Henderson, Nevada 89104

