

REPORT
of
OPERATIONS AND DEVELOPMENT
of the

LUIS MARIA BACA MINING & DEVELOPMENT COMPANY

Saguache County,

Colorado

LIBRARY
COLORADO SCHOOL OF MINES
GOLDEN, COLORADO

Report furnished by: Charles O. Parker, Denver, Colorado

A SYNOPSIS OF
THE
OPERATION, DEVELOPMENT, AND POSSIBILITIES
OF THE PROJECT OF THE
LUIS MARIA BACA MINING AND DEVELOPMENT COMPANY

The Luis Maria Baca Mining and Development Company, holding a prospecting license and leasing privilege on the mountain area contained within the Baca Grant #4, was incorporated under the laws of Nevada in May, 1934. The present capitalization is \$210,000.00, all common stock fully paid and non-assessable. The officers of the corporation and their addresses are:

Charles O. Parker, 1901 Lawrence St., Denver, Colo.
President

Max M. Fife, Blackwell, Oklahoma, and Crestone, Colo.
Vice-President and General Manager.

W. R. Dodson, Oklahoma City, Oklahoma, 612 W. 22nd St.
Secretary and Treasurer.

The directors of the corporation, and their addresses are:

Charles O. Parker, 1901 Lawrence St., Denver, Colo.
Max M. Fife, Blackwell, Oklahoma, and Crestone, Colo.
W. R. Dodson, Oklahoma City, Oklahoma, 612 W. 22nd St.
Carl Haun, Blackwell, Oklahoma.
D. K. Wolfe, Jr., Equitable Bldg., Denver, Colorado

LOCATION

The Baca Grant #4, situated in the San Luis Valley, Saguache County, which is in the southern central part of the State of Colorado covers an area of $12\frac{1}{2}$ miles square. A triangular tract on the eastern end lies on the western slope of the Sangre de Cristo Range. This triangular tract is approximately $4\frac{1}{2}$ miles deep at the north end of the grant and extends $12\frac{1}{2}$ miles along the range to the south. The Sangre de Cristo range has a S 20° E trend, while the grant lies north and south, hence the triangular tract lying within the mountain range. The mountain area covers about 18,000 acres of possible mineral territory.

TITLE

The Mining Company is operating under a permit to prospect and lease from the San Luis Valley Land and Cattle Co., owners of the grant. This permit covers the privilege of prospecting for mineral anywhere within the mountain area on the Grant, and to obtain a lease upon any prospect or mine of sufficient merit to warrant development and operation. The permit to prospect expires December 13, 1936. On or before this date, the Mining Company may obtain a lease upon any or all of the areas contained within the mountain area. The period of lease is for 10 years with the provision that an extension may be asked for three additional 10 year periods, making a lease with total life of forty years.

The Grant is one of the old original land grants made by the Spanish Government to many Mexican cattle owners. The title to the grant dates from 1829, and has changed hands several times. The present owners purchased the grant in about 1899.

HISTORY

There is evidence that mining has been performed within this area at an early date, possibly by Spanish explorers or adventurers. The proof and record of such work is so slight and surrounded by myth that mention is made here only to show that mineral was possibly known to exist long before historic records indicate. From 1870 until 1897, the mountain area was the scene of intensive prospecting and mining activity by independent prospectors. These prospectors operated on the belief that the grant owned only the surface and grazing rights, and that the mineral rights were open for location. In 1897 the U. S. Supreme Court held that the Grant owned the mineral rights, and acted to dispossess and evict all prospectors and miners as trespassers. This early activity resulted in the discovery of numerous veins and deposits of ore. Several mines were worked on a fairly large scale, resulting in profitable operations. The two principal mines were the Bonanza and the Independent. No accurate record is obtainable on the production of the Bonanza, but the extent of the workings would indicate a possible production running into many thousands of dollars. From current reports, the property was producing high grade ore at the time the Supreme Court dispossessed the operators. It is of interest to note that the last 12 sacks from the Bonanza are reported as having netted \$200.00 per sack. According to the older natives of the district, the operators blew up the shaft at the time of their eviction. Except for leasers "robbing" pillars from the old workings, the mine has not been operated since that time until the present company performed some prospecting on the lower level.

According to reports, the Independent mine, the largest operation in the area, produced a fortune for the two operators up to 1897. The discoverers and operators of the Independent Mine were named Dimmick and Mattison. After the eviction, the Grant owners endeavored to continue the operation on the Independent and soon after installing a 100-stamp mill found their capacity far in excess of the possible mine production and in 1902, ceased mining operations entirely. A number of prospects were also worked in a small way during the years of 1870 to 1897, for the most part on a grubstake basis. The location of many of these prospects have become lost and during the past year, since July 1934, this company has prospected and attempted to locate as many of these old prospects as possible in an effort to determine the merit of the venture. The aid and assistance of the old natives still alive has been relied upon to locate some. Many of the prospects known to exist have been located and examined, and a definite plan of action mapped out on those prospects which have been located and found to warrant further development.

CLIMATE

The western slope of the Sangre de Cristo Range is protected from the severe storms coming from the north and east in the winter time. Work may be carried on during the entire year. Except for the winter months, December, January, and February, the climate is ideal for mining. The altitude of the mining area varies from 8000 to 13,000 feet.

ACCESSIBILITY

All materials and machinery used in mining are either shipped to Moffat, Colorado, by way of the Denver & Rio Grande Southern Railway, or hauled by truck direct to the seat of mining operations. From Moffat to Crestone there is a good county highway. The distance is 12 miles. The haulage from Crestone to the mines is over a fairly good road constructed and maintained by the Company.

POWER AND TIMBER

While it may be possible to develop considerable power by water, until a complete survey and estimated cost of installation is made, this source of power should be held in abeyance. From the experience gained since the Company has been in operation, diesel type engines seem to offer the best source of power. Should any of the prospects develop into a really large operation, the possibility of developing power through water can be given serious consideration. Sufficient water for domestic and milling purposes is available throughout the year. Timber is available on the Grant and should supply the mining operations with timber for many years. The timber is to be purchased from the owners of the Grant at the current prices existing with the U. S. Forestry Service. Native sawed timber and lumber is available in the vicinity at \$30.00 per thousand and unless the mining operations in the future justify the installation of a saw mill, this source of sawed material should be sufficient for the needs of the company.

TOPOGRAPHY

The area is very rough and rugged with steep canyons. The range is the highest average range in the United States, averaging well over 13,000 feet at the crest. The rugged nature of the area is advantageous in developing ore at great depths with comparatively short drifts or crosscuts. It does, however, make prospecting and exploration of the area rather difficult since most of the prospecting must be done on foot.

GEOLOGY

A. GENERAL:

The area extending along the Sangre de Cristo Range, and for several miles into the range is practically all metamorphic rock ranging from soft, flaky and laminated schists varying in composition from acid to basic, to dense granitoid schists very closely resembling their igneous equivalents. These metamorphic rocks are classified as Pre-Cambrian. The intrusion resulting in the Sangre de Cristo uplift is of granite or syenite. The intrusion formed a large fault zone at the base of the range and fractured and metamorphosed the rocks which overlay the intrusion or through which it passed. The principal fracture fissures run roughly parallel to the range except where minor intrusions have caused a deflection from this strike. Intrusions along and across these fractures in the form of dykes, injection tongues, and stocks vary from felsitic to granitoid in texture and from acid to very basic in composition. These intrusions are apparently responsible for the ore deposits encountered in this area. For the main part, the ore deposits occur along the strike faults described above. There is considerable transverse faulting noticeable, but from lack of development no data is obtainable bearing upon mineralization or the effect on the ore deposits. The types of ore deposits noted to date vary from the wide, loose, low-grade deposits encountered close to the base of the range to narrow, tight, frozen streaks of ore usually encountered some distance back in the range. The larger bodies of ore at the foot of the range were formed where movement was greater and pressure less, and those back in the range are smaller because of the greater pressure and less movement along the zones of the fracturing. Gold is the principal precious metal value and has always been found associated with any one or all of the minerals: chalcopyrite, galena, and pyrite. Silver is a minor source of value. Copper and lead, while present in most ores, are of too low percentage to be considered from an economic standpoint. Oxidation is noticeable in the veins to great depth and

the water table likewise is quite deep indicating that the present dry climatic conditions have been existent over a great length of time. In the larger, less consolidated veins, oxidation has completely removed the primary sulfides above the water level leaving honey-combed quartz usually with iron oxide staining. The ore bodies usually occur in lenticular masses, often overlying each other within the vein faults.

B. DETAIL:

The Independent ore body is an example of the loose, low grade deposits, occurring only a few hundred feet in the range, dipping about 45° to the west. The shear zone on the Independent vein is about 35 feet in thickness. The ore zone along the hanging wall of the shear zone was mined over an average width of 18 feet. The average of the ore in the oxidized zone above the water level has been about \$8.00 per ton at the present price of gold. No development work on ore has been performed below the water level. In 1902 a shaft was sunk 550 feet in depth about 800 or 900 feet west of the ore at the collar of the shaft; the old operation sunk the shaft, but no cross-cut was driven to connect with a winze sunk at this level in the shear zone. In 1909, Mr. Tipton, the manager of the Grant at that time, unwatered the shaft and completed the cross-cut. It is believed, from a reliable source of information, that this crosscut cut an 18-foot vein in which white quartz containing pyrite was found. Approximately ten tons of ore of this nature was taken from the dump and run thru the mill as an experiment. This ore yielded approximately one ounce per ton in gold. The source of information on this 18-foot streak states that the shear zone contained numerous quartz stringers throughout the 18 feet, separated by layers of schist. This checks the ore occurrence above the water level where the honey-comb quartz lenses occurred with the laminated and flaky schist seams across the vein. In 1909, Mr. Tipton considered this ore refractory and did not develop any further.

The ore body of the Independent Mine above the water level was formed in the shear zone that had been distorted by a monzonite intrusion cutting the shear zone transversely. Only that portion of the shear zone south of the intrusion was developed. No development was performed north of the intrusion. The prospect of further ore above the water level to the north and the possibility of developing primary sulfide ores in the bottom of the shaft are the only real mining possibilities of the Independent.

South along the range about six miles, a lease has been granted to a Mr. Canfield. This area covers about 300 acres of mountain country. Mr. Canfield has carried on a development program on a shear zone similar to the Independent and with the assistance of two hand miners developing continuously since February, he has opened an ore body containing about 5,000 tons of ore, with the drift having been in ore continuously for over 150 feet, and the breast continuing in ore at the present. This body is a soft, flaky schist with narrow stringers varying from a knife-edge up to three and four inches of rather high-grade ore, - i.e., nine to eleven ounces, - cutting the schist bed in all directions. It is these little seams that make the entire width, milling ore of about \$17.00 grade as verified by assays and samples taken by Mr. Canfield. Since February, 1935, Mr. Canfield has carried on a systematic development program developing ore for milling purposes. The results are more than gratifying, and in the opinion of Mr. Canfield a large low-grade mine is in the making. The Canfield lease is contemplating the installation of a mill located at Deadman Creek. With the

development continuing as it has to date, this mill should be installed and operating early in 1936. The Luis Maria Baca Mining and Development Company owns a one-eighth interest in this lease. Development on the Canfield lease has been above water level and values at its lowest depth are considerably higher than those close to the outcrop.

Aside from the definite mineral showings in the area, there are several very interesting geological possibilities: East of the Canfield Lease there has been a folding in the schist beds. At the time of the folding, faulting occurred both east-and-west and north-and-south. Along the faults, close to the surface, pockets of high-grade ore carrying from ten to fifty ounces per ton in gold, occurring in loose zones parallel to the schistosity. At the junction where the schistosity very definitely changes from an easterly to a westerly dip, a large saddle has been formed in the present topography. Beneath this saddle it is quite possible that from this broken zone faults may emanate, and an ore body may exist relatively close to the surface.

South of the Canfield Lease about a mile and a half, is a prospect known as the Portland, a huge honey-comb quartz deposit outcrops on the surface; a tunnel or a drift through this ore body close to the surface indicates that the body is over 60 feet in width. The values in this drift vary from .02 ounce to .10 ounce gold per ton. That the quartz originally contained gold is quite evident from the fact that a concentrate can be produced from this quartz containing very high grade gold values. However, the geological gamble on this deposit would probably be completed by either diamond drilling through the body below water level or by sinking a shaft to the same depth and crosscutting the quartz. It should be feasible to use diamond drilling to prove this occurrence.

The six most favorable prospects upon which the company wishes to concentrate its development efforts at the present time are the Grandview, Alamosa, Midnite, Parker Shaft, Sunset, and the Cora D. These will be taken up individually in this synopsis.

Other prospects which have been located and sampled are the Big Horn Mine, the Midnight Test, Billy Houston, Billy Bangs, Blue Bird Tunnel, Cleopatra, Cossack, El Paso, Dodson Shaft, Eastern Star, Golden Phantom, Gold Union, Great Eastern, Great Western, Hidden Gold, Hill Top, Homestake, Irene, Molka Shaft, Milwaukee, Shot Hole, Silver Hole, Copper Hole, May Bell, Wild Cat, Portland, and many other small virgin outcrops. The above named prospects have all been sampled and indicate a possibility of containing commercial ore after development.

PROSPECTS

Besides the prospects mentioned above, the Prospecting and Engineering Department have located numerous ore deposits varying in width from a few inches to several feet, carrying gold values from one-half ounce to three and four ounces, and in some instances as high as 40 ounces per ton. The ore occurrence in these narrow, higher-grade veins is no doubt pockety, although no development of any consequence has been performed upon these deposits to prove or disprove ore bodies at depth.

The Independent Mine and the Canfield Lease are foremost among the prospects in the range upon which intelligent development has been performed. The shear zone along the base of the range is known to exist for many miles and it is not unreasonable to expect to discover other ore bodies of similar magnitude because while the

Independent Mine and the Canfield Lease are about six miles apart along the basal shear zone, they are of different types and probably not mineralized through the same local intrusion.

The Alamosa Mine, situated about a quarter of a mile south of Cottonwood Camp, while very close to the front range is tighter than the Independent Shear zone and more nearly vertical, apparently a contact between the schist and a granitoid rock. The ore body on the Alamosa averaged about three feet in width and lent itself to shrinkage stoping from the small ore body that had already been developed before the advent of the Luis Maria Baca Mining and Development Company. The L.M.B. Co. mined a block of ore about 70 feet in length and a maximum depth of 75 feet, containing approximately 1200 tons of millable ore. The ore body was shorter at the surface than at the tunnel level and was not over thirty-five feet in length at the surface. A shaft is being sunk on this vein and conforming to development plans, drifts on the vein will be driven at 75 to 100 foot intervals to facilitate the mining of the ore by shrinkage stoping. At this time the shaft is down about 30 feet. The ore is gradually changing from an oxidized character into sulfides and at this depth a sample across four feet assays .52 ounce gold per ton. The crosscut tunnel, a continuation of an old crosscut through which the Alamosa ore has been mined, is being driven east into the mountain with the objective being to crosscut the Gold Union Vein.

The Gold Union Vein has been developed on the surface by a shaft 100 feet deep. Assays of over 2 ounces gold per ton have been obtained from this vein. This crosscut will also explore approximately 500 feet of ground lying between the Alamosa and the Gold Union veins. The crosscut has been driven a distance of 75 feet at this time. There have been three distinct shear zones or faults cut in this distance two of which should be developed laterally by drifts. It is the company's intention to do this drifting. The Alamosa Mine should be a producer of a large volume of commercial ore that may be mined and milled at a substantial profit if the conclusions based on past performances are correct.

The Midnite and Parker Veins, are wide shears in the schist standing almost vertical. The vein matter is, so far as they have been developed at depth, a tale with small layers of quartz impregnated with pyrite carrying gold. The pyrite has been oxidized to hematite. The Parker Vein, about a half of a mile east of Cottonwood Camp on the north ridge of Cottonwood Creek, has a shaft 28 feet sunk on the vein. The average of the engineers' samples taken from this shaft is .33 ounce gold per ton over four feet in width. The last sample taken on the south side of the shaft at the bottom ran .44 of an ounce gold over sixty inches. It is the consensus of opinion that the Parker Shaft may develop into a large, cheaply mined and easily milled producer of commercial ore.

The Midnite Mine was originally developed on the surface by a shaft sunk on the vein to a depth of 35 feet. This shaft was sunk on ore averaging .30 ounce gold per ton over an average width of 4 feet. At the time of the eviction of the prospectors from the grant, the prospect appeared of sufficient merit for the Grant Company to drive a drift 700 feet on a vein 180 feet below the collar of the Midnite shaft. This drift encountered only one small ore shoot and no mining was done. The L.M.B. Company decided to raise from the drift to connect with the bottom of the shaft. This raise is now 138 feet above the floor of the drift and has been in commercial ore for about 50 feet. At the 138 foot level above the drift the vein has widened to 6 feet showing an average of .33 ounce gold per ton. An individual streak in the vein 1-1/2 feet wide was sampled giving an assay of 2.76 ounces gold per ton. An extensive sample indicates a large volume of commercial ore existing in the Midnite Mine. As

soon as the raise is connected with the shaft facilitating ventilation the property will be started into production. The portal of the Midnite drift is only 200 yards east of the mill. The character of the ore and location makes it ideal for low mining, milling, and transportation costs.

The Sunset and Cora D. are examples of the tight, narrow, high grade veins found back in the range, although the Cora D. is not over a quarter of a mile east of the foot of the range. The Sunset, situated about a mile and a half southeast of Cottonwood Camp, lends itself very well to economic development at considerable depth. The vein cuts through a ridge and is traceable from the crest to the bottom of the south side 800 feet below the apex at the crest of the ridge. At the foot of this ridge ore is found similar to that which has been gouged out by prospectors at an earlier day containing visible free gold. The L.M.B. Company within the past few weeks, salvaged six tons of ore from the old dumps of the Sunset Vein. The six tons were run through the mill and a sample taken gave an average value of .42 ounce gold per ton. Considering that this six tons of ore was left after taking out the better ore, the Company was well pleased with the results. Records of a former operation are available showing quantities of ore having been shipped from the Sunset Mine with Smelter settlements averaging about 4 ounces gold per ton.

The Cora D. workings, a quarter of a mile north of Spanish Creek and about two miles north of Cottonwood Camp, consist of a 50 foot shaft sunk on the Vein and some 300 feet of surface trenching discloses the vein in place and containing commercial ore in the trenches. An old tunnel had been driven to crosscut the Cora D. Vein at a depth of 70 feet below the collar of the shaft. It is believed that this crosscut did not cut the Cora D. Vein. Assays and mill runs from the Cora D. Vein show values of from .38 ounce gold per ton to 5 ounces gold per ton. The width varies from 16 inches to 3 feet.

The Grand View Mine is located approximately two miles south of Cottonwood Camp. This was developed by a shaft sunk on the vein 82 feet. The vein is approximately 30 inches in width and carries gold values ranging from .28 an ounce to 3 ounces gold per ton. A ten ton mill run of ore taken from the Grand View shaft and salvaged from the Grand View dumps gave an average of .38 ounces of gold per ton.

RESUME OF PRESENT OPERATIONS

The Luis Maria Baca Mining and Development Company was organized in May, 1934, and since July 3, 1934, has continuously operated on a campaign of exploration, prospecting and development. The Company has reached a point in its development program that makes it necessary that additional capital be received to develop several of these known prospects to a point of operation and production. During this time approximately \$75,000.00 has been expended to prove the merit of the area. All of the Directors of the Company are financially interested in its project and the present officers have expended a major portion of their time on its operations without pay. The result of its year and four months' activity has strengthened the belief of the Directors that the area is worthy of intensive and intelligent development and mining. It is their plan to raise additional capital to develop the more favorable prospects and to make several changes in the mill necessary to further reduce the milling costs and increase the recovery. During the period of operation since July 3, 1934, the L.M.B. Company has constructed roads traversable by car along the foot of the range making accessible by road the marginal area between the valley and the range. It has also made trails to many of the prospects to be used by burro trains, horses and pedestrians.

In February, 1935, construction of a 35 ton per day mill was started. The mill was completed and put into operation on April 23, 1935. The mill contains a 200 ton primary crusher, the ore being elevated to a fine ore bin. From the fine ore bin the ore is fed into a 43 Marcy Ball Mill running in closed circuit with a Simplex Dorr Classifier. The undersize from this classifier runs over Brussels rugs into four Denver Sub-A. #11 flotation cells. The bulk concentrate from the flotation cells contains between eight and ten ounces of gold per ton. This concentrate is run into three settling bins for drying. The tailings from flotation are run over a Wilfley table. The concentrate from the Wilfley table contains about 1 ounce of gold per ton and the quantity made very small. The purpose of the table is to serve as a pilot on the flotation operation. The tailings from the table are run over an outside sluice box attempting to recover any fine gold that might have gotten away. This concentrate averages about .60 of an ounce of gold to the ton. The recovery from the mill has averaged about 90%. The mill is powered with a 110 h.p. Fairbanks Morse 2 cylinder Diesel engine. A generator set has been installed in the mill furnishing electric light for the mill and entire camp.

The camp comprises one main office building with rooms for the Directors, two bunkhouses capable of housing thirty men, a warehouse, furnace room for the assay office, and laboratory, having been built during the period of operation. The mess hall, kitchen and living quarters for the cook, which was on the property before the Company started, have been fully equipped for a maximum of 50 men.

While the mining and milling operations of the Company have been carried on satisfactorily, the Company has expended its capital in the erection of its mill and in the prosecution of its various operations. As a result, the Company lacks the necessary funds for acquiring the equipment and machinery essential to the proper operation of its contemplated extensive work on the selected prospects in the manner which they deserve in the judgment of the Directors. It is to obtain this additional capital for these purposes that the present offering to the public of a limited amount of capital stock is being made at this time.

The experience which the company has gained in its mining and milling operations to date has given it a sound basis on which to estimate costs. During the period from August 12, to September 8, 1935 an accurate check was held on the milling operation and the direct costs of milling ore was \$1.61 per ton. Costs of mining necessarily vary with location and local conditions but during the period from August 12, to September 8, 1935 the average mining cost was \$2.20 per ton. Taking the average mining costs of \$2.20 and the milling cost of \$1.61 per ton gives a total direct cost of \$3.81 per ton on a 35 ton per day basis. It is apparent that the company at the present time, by virtue of its operating experience, has a valuable and effective standard or gauge by which to test its prospects and its future activities.

With its approximately 18,000 acres of potential mining land and the numerous prospects above mentioned, the company realizes the fallacy of attempting to develop the entire area by itself. Accordingly, it has been deemed advisable to sublet certain portions of this area. The desirability of working the narrow, high grade veins by sublicensees or sublessees, with the ore produced by them to be handled in the company's mill, is apparent. A substantial royalty, with an adequate milling charge, to be paid by these sub-operators to the L.M.B. Co., together with the information obtained from such operations, constitutes a potential asset of great value to the company. It is not unreasonable to assume that eventually there can be at least twenty groups of sub-operators. Assuming that each of them should produce only \$100 per month profit for the company, they would net the company \$24,000 per year.

CONCLUSION

The Luis Maria Baca Mining and Development Company believes that its 18,000 acre area has the potential possibility of becoming a really large producer of gold. Nowhere in the state of Colorado is there such an area available to one organization, free from the outside influences so often detrimental to mining, with the apparent possibilities disclosed by the operations of this company. It is not to be inferred that the "forgotten" district of Crestone is the greatest mining area in the state of Colorado; but, with an entire area or metallogenic province under the control of one company, it is possible and even probable that a number of profitable producers can be developed within the next several years. We believe that the L.M.B. Co. is in an enviable position to profit from the development of this district, not only from the company's own operations in the development of the prospects discussed herein, but as well from the work of sub-operators throughout the entire area.

LUIS MARIA BACA MINING AND DEVELOPMENT CO.,

Crestone, Colorado

November 1st, 1935