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GOLDFIELD

GOLDFIELD DEEP MINES COMPANY —

G.C. SNYMAN —

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FLORENCE GROUP

REPORT
OF
GOLDFIELD DEEP MINES COMPANY
OF
NEVADA

The Company owns 60 patented and seven unpatented mining claims in the Goldfield Mining District in Esmeralda County, State of Nevada. These claims cover an area in excess of one thousand acres.

The Company also owns a lease on the underground block of mining ground below the 600-foot level of the Clermont Mine adjoining its own properties.

For convenience of description, the mining properties are divided into the following groups:

FLORENCE MINE GROUP

LEASES:

Properties leased to Eastern Exploration Company.
99-year lease on ground below 600-foot level of Clermont Mine.
Ground underlying claims leased to Eastern Exploration Company, and contained in downward extension of the Goldfield Consolidated Florence vein.

DEEP MINES SHAFT

BLACK BUTTE MINE

## FLORENCE GROUP

**LOCATION:**

The Florence Group of mines consists of five patented lode mining claims located in the Goldfield mining district, Esmeralda County, State of Nevada, east of the City of Goldfield, and on the southern end of the Consolidated-Florence Main Vein Syetem.

**ELEVATION:**

The elevation of the Florence main Shaft collar is 5,749 feet and is located approximately at the junction of the extension of the Goldfield Consolidated-Florence vein and the branch veins split from the Jumbo vein in a southwesterly direction. The elevation of the City of Goldfield is approximately 5,600 feet.

**CLIMATE:**

The usual dry climate peculiar to the southwestern part of the U. S.with very little rainfall. Some snow in winter but not enough to hamper operations.

**ACCESSIBILITY:**

Goldfield is served by the Tonopah-Goldfield Railroad Company, which provides track facilities to the Florence Mine and other properties of the Company. Goldfield is also served by a highway running north and south; to the north, Tonopah, and to the south, Las Vegas, and other points in between.

**TITLES:**

The title of the property consists of government patents, and possessory title on unpatented claims, and came into the possession of the Goldfield Deep Mines Company of Nevada by deed and without any encumbrances. This information was verified by the Assistant Secretary of the Company, and also their attorney, Mr. Franchot.

**FACILITIES:**

Electric energy is supplied by the Nevada-California Power Company. Water for domestic purposes and for milling is supplied by the Goldfield Consolidated Water Company.

**GEOLOGY:**

There are various comprehensive reports on the geology of the Goldfield district, and the work that is most used, and which has been the source of inspiration and guide to most engineers, is that of Mr. Frederick Leslie Ransome of the U.S. Geological Survey, and published as Professional Paper No. 66.

The general geological structure consists of a series of tertiary volcanics overlying much older rocks, such as Cambrian shales, these being uplifted and faulted by igneous intrusion, and due to stresses and strains caused anticlinal folds laterally along the zone of fracture. Erosion exposed the outcroppings, which have been greatly altered in this particular area.

The principal types of volcanics are Dacite, Milltown Andesite, and Latite, which are the enclosing rock formations for the greater part, from which the production has come in this district.

The Latite appears to be the original flow. Next appears the Milltown Andesite in a series of flows, and the Dacite more or less as an intrusive mass.

This Dacite was probably injected along the line of least resistance from the great depths through the earlier tertiary rocks, causing fracturing and some displacement, this being accompanied and followed by mineralization and alteration with enrichment of certain zones in the uplifted rocks. In the Florence Mine as developed, it is noted that the most notable production has come from the Andesite.

The occurrence of Alunite as a primary mineral has been established at Goldfield. It is associated with gold, sulphides, tellurides, and kaolin. The Alunite alteration is widespread and is intimately associated with ore deposition. The Alunite occurs massive as a crystalline constituent of the altered rocks in the ore-bearing areas, and inter-crystallized with pyrite, gold, tellurides, and other minerals in the ores.

Silicification of the vein matter or quartz, and wall rocks by hydrothermal metamorphism is a common form of primary alteration that is associated with this ore deposition. The quartz vein matter his highly silicious. The Gold in these veins appears to have been precipitated in the course of alteration, through solutions of high acid content of the descending waters in the zones ofoxidation, and also appears in soft seams of altered Alunite and kaolin.

ORE DEPOSITION:

In a study of a glass model of the workings of the Goldfield Consolidated Mines and adjacent properties that were plotted, it has been noted that the zone of greatest enrichment appears on a line bearing southeast through the Consolidated Shaft between the Clermont Shaft, the Grizzly Bear Shaft, and the Merger Shaft, on the St. Ives Claim, and more or less in a trough in the southeastern side of the anticlinal fold, the line above described being the nose of this fold, or axis, forming a trough, or sinclinal fold to the south. The southern side of

this trough being the uplift in the region of the Florence Mine. This zone appears to have emanated from a common Vent, deep down, and as the mineralization ascended near the surface, it dissipated to the north and south along this zone of fracture, which is known as the main Consolidated-Florence vein. Areas of enrichment penetrated close to the surface, and erosion took place subsequently, to uncover these zones of enrichment, notably in the Sheets-ish Mine to the north of the Consolidated, and the Consolidated in the center, and the Florence on the south, forming, as it were, the shape of a vase with two curved lips. (Note accompanying sketch.)

In addition to the Consolidated-Florence vein, there appears to be other veins, such as the Jumbo, and veins with smaller outcroppings, which outcroppings appear on the surface to the east and dipping parallel with the main Florence vein to the southeast, having more or less the same anticlinal fold peculiarities.

The Jumbo vein on the southern end being split; one branch veering to the southwest, and apparently forming a junction with the Consolidated-Florence vein in the neighborhood of the Florence Shaft; the other branch curving around parallel to the main vein, turning thence in the direction of the C.O.D. Mine farther south. A massive outcropping of this portion of the vein appears to the east of the Florenced Shaft, and is located on the Bee-Fraction Claim.

HISTORY:

After the discovery of gold in this district and the location of such mines as the January, Combination, Red Top, Florence, and Jumbo, very little consistent development was carried out in them. Aside from actual location and some assessment work, the main operations were carried on by leasers and it is to them that credit should be given for the ore discoveries that were made.

The extraction of ore continued intensely in this fashion until the year 1909, after which the Goldfield Consolidated Mining Company, constructed a 100-stamp mill on the northwest side of Columbia Mountain and started milling operations. The history of its production is well known and needs no further comment. Other properties surrounding this Company continued in a desultory fashion with leasers, the more notable being the Florence Mine, on which subsequently a 40-stamp mill was erected beginning operations in 1909. A period of production on company account with some leasers followed, resulting in a total extraction of approximately $5,750,000. This mill subsequently burned down. It is understood by the writer that the company resorted then to selective mining again, leaving the ores of lesser value in place, or broken in the various stopes.

After the flotation process came into use, a mill was installed at the Florence Mine and for a period of several months treated ore, some of which came from the dumps. This operation was not productive of profits. The present officials of the Company have made an analysis of that operation, which is of great interest, and which clearly determines the reasons for its failure, and which in the future will afford an opportunity to study and rectify some of the mistakes that were made at that time.

The flotation process for treating gold ores has been greatly improved, both in mechanical improvements in the flotation machines, and the discovery of re-agents in the process of mineral separation, so that it is well within reason to state that a 90% or better, recovery is easily possible.

FLORENCE GROUP:

The Florence Group consisting of the Florence, Cornishman, Red King, Firelight, Emma-Fraction, and Bee-Fraction Claims, were visited. The main Shaft afforded access to the workings. This Shaft in the Florence Group has three compartments, two for hoisting ore, and one for water lines, air lines, and ladders. It has a total depth of 1,200 feet. For the present it is flooded up to 900 feet. The timber in the Shaft, as a whole, is in good shape but below the 150-foot level there is need for immediate repair. This Shaft is equipped with a very good head frame and a double drum hoist.

The main Consolidated-Florence vein in the neighborhood of the Florence Shaft is more nearly vertical compared to the vein to the north. This condition might be the result of the uplift at this southern end of the vein and caused by faulting beyond the Rogers workings. It was noted that from near the surface to the 350-foot level the vein alternately dips to the west and then to the east. At the 500-foot level it dips to the east, conforming to the general dip of the vein system of the district. It is reasonable to expect that this vein will flatten out with depth. The accompanying map of the various levels and workings will bear out this assumption.

The 150, 350, and 500-foot levels were accessible to some extent, and the old stope workings in the Sweeney, the Riley, the Wheeler, the Baby No. One, Baby No. Two, the Little Florence, the Engineers, and the Rogers stopes were penetrated, disclosing the method of mining, stoping, and extraction of the rich pockets, or lenses, that were worked by the leasers.

In very few instances were the walls of the stopes exposed and it was clearly shown how the leasers followed the rich streaks in one portion of the vein, and then, for no reason

discernible to the writer, abandoned this particular location and ran small crosscuts in all directions, supposedly following the rich knife-blade seams and opening up adjacent to the first working, another lense of high grade ore, thus creating in time a honeycombed condition in the vein mass between the wall rocks.

Much of the lower grade ores were left in the stopes as the leaser did not care to perform any more work than was absolutely necessary to facilitate the extraction of the high grade ores in as quickly a space of time as possible. In various stopes, such as the Riley, the Rogers, the Baby No. One, Baby No. Two, and the Engineers, considerable caving has occurred.

Aside from the information afforded by the Company of the grades of ore that have been shipped, which has been stated in the Prospectus of the Goldfield Deep Mines Company by its President, the writer was able to obtain evidence sufficient to attest to the fact that ores of great value were extracted from these various stopes, since it was common custom for the leasers to have in the vicinity of their workings, a dynamite box littered with assay returns of samples which they took to the assayer for guidance, this being also their office headquarters underground. Several of these assay returns were examined and in some instances control assay reports were available to testify to the accuracy of the statements made by officers of the Company.

Due to the condition of the mine below the 500-foot level it was not deemed advisable to penetrate the workings further down, but maps available indicated to what extent the development had been done. There is no reason to doubt the probability of the continuation of the ore bodies below the 500-foot level and this can be easily explored since the Florence Shaft has a total depth of 1,200 feet. The physical condition of the drifts tapping these various stopes will require considerable repair and timbering, so that the extraction of the ores will be facilitated and result in low cost. Much efflorescence is present in the drifts, floors, and walls which will result in a dusty condition when tramming operations are undertaken.

In the north corner of the Florence Claim, adjoining the Combination Fraction Claim of the Consolidated Goldfield Mining Company, is the only portion of the property that is being operated by a leaser and is known as the Forsythe lease. An examination of this portion of the mine was also made, it being desirable so as to experience the actual working of a leaser and the method used by him to work these lenses of rich ore.

This particular lease disclosed the fact that five shipments during the last several months resulted in a total of

$22,134.79 of smelter returns. The width of the lense from which this ore has come has an average of two feet and a series of stulls were placed in the stope in a haphazard way to facilitate drilling operations. The greater portion of the rock broken is being hoisted to the surface by means of a gasoline hoist through the Shaft on the Combination Fraction Claim, and subsequently sorted, the lower grade ores being stored on a dump for use of the company later, shipment being made of the high-grade ores only.

In this portion of the mine it appears that there are various parallel mineralized fractures being offshoots from the Jumbo vein in the direction of the Baby No. Two and Gem Shaft. The possibility for exploration of this ground is good.

ORE RESERVES:

The following is a table of tonnages of ore that can be made available for milling operations. The estimates of these tonnages are made from observation of a considerable portion of the workings that were accessible, and information gathered from employees of the company, which can be relied upon.

| PLACE | TONNAGE | VALUE PER TON | TOTAL |
|---|---|---|---|
| Riley | 17,000 | $11.00 | $187,000 |
| Riley | 10,000 | 11.00 | 110,000 |
| Sweeney | 35,000 | 8.00 | 280,000 |
| Wheeler | 4,500 | 10.00 | 45,000 |
| Little Florence | 10,000 | 7.00 | 70,000 |
| Florence Cons. | 10,000 | 12.00 | 120,000 |
| Engineers | 5,000 | 8.00 | 40,000 |
| Miscellaneous | 50,000 | 8.00 | 400,000 |
| TOTAL | 141,500 | Average price $ 8.85 | $1,252,000 |
| PROBABLE ORE: | | | |
| Baby Florence | 200,000 | $ 5.25 | $1,250,000 |

In these various stopes there are fills and cavings of ore which have been taken into consideration as miscellaneous. No consideration has been given in the average value computation of the high-grade streaks visible and in all probability still undisclosed in unstoped areas of the vein. The probable ore in the Baby Florence has been variously stated as visible from two sides. Access to a portion of these workings was attained, but it is advisable, until greater development in this area has been done, to put it down as probable ore. Average value has been computed from drill hole samples taken by the Management over a width of 100 feet.

It has been the experience of previous operations, that on account of the excessive variation in values, and the irregularity in form of the ore bodies, it is impossible to make accurate estimates of ore reserves. The average grade of ore produced is largely dependent upon these very rich irregular streaks which traverse the ore bodies in many directions and that samples from exposed faces generally do not indicate or approximate the average value of the production of the stopes.

A case in point, is that in the Riley caved stope it was stated authentically that 2,600 tons of ore were drawn from this caved portion having an average of $14.00 a ton. On another occasion, 400 tons of ore were extracted, having an average value of $26.25 per ton (gold at $20.00 per ounce). The condition surrounding this Riley stope that was caved does not differ from the rest of the Florence Mine and, it is therefore, reasonable to assume that considerable tonnage can be drawn from the stopes already worked by the leasers to supply the tonnage as above computed. There is sufficient precedent also in the past production of the Goldfield Consolidated Mines Company over a period often years from the stopes that were abandoned by leasers previous to that time.

DUMPS:

There are several dumps on the Florence claims and a large tailings pond. While these may contain ores of millable grade, it is not desirable to consider them as a source of tonnage. In the majority of cases, dumps are over-estimated as to tonnage and values, and, it is therefore, preferable not to take them into consideration.

ORE BODIES: (character, composition, and deposition)

It is noted that the main Florence vein varies in dip near the surface but lower down it takes the general dip to the southeast. The rich zones rake to the northeast in the direction of the trough and common Vent as described under the heading of "Ore Deposition". The ore bodies are irregular in direction, dimension, and richness.

The whole mass has been subjected to physical and chemical change within the limits of the enclosing rocks but is more or less clearly defined. The vein matter varies in width from five feet to 100 feet, or more. Within these limits the lenses of higher grade ore are found. They may be located on one or other of the walls, or in the center of the mass with varying dimensions, character, and grade.

This irregularity of occurrence and direction has been responsible to a large extent for the long-continued leasing in this mine. In some development workings rich lenses have been

passed by within a few feet and later were picked up through mere luck in subsequent leasing operations, so that it is reasonable to state that a stope has never been depleted of rich stringers of ore throughout these extensive workings.

FUTURE DEVELOPMENT:

Below the 500-foot level it was stated by the Management that a certain amount of drifting was done with a small extraction of ore and that this area in all directions from the main Shaft can be considered virgin at the present time. This condition affords the opportunity to develop large tonnages of ore since the total length of the workings above the 500-foot level is in the neighborhood of 3,500 feet.

In the other mines adjacent to the Florence, the shafts have penetrated to greater depths and ore has been taken out in abundance so that the Florence Mine presents the opportunity for much greater production in the future than in the past, considering that the method of mining and treatment of ores have improved so much in the last twenty years.

The area between the Riley on the northwest, the Wheeler and Forsythe to the north, the Bee-Fraction on the east, and the Rogers on the south, affords a virgin territory still to be explored below the 500-foot level. Considering the depth to which the other mines in this vicinity have been worked, and assuming that an average depth of 1,500 feet was attained, with ores of high value, the picture presented in the Florence Group would indicate that only one-third of the mine has actually been explored and in consequence future development should present vast possibilities.

FUTURE ORE TREATMENT:

Taking into consideration the computation of tonnages available in the workings above the 500-foot level, and the probable ore that can be developed from the Baby Florence, it is entirely feasible to erect a 200-ton flotation plant to start operations, with the provision being made for additions as ore reserves are developed below the 500-foot level.

The character of the ore in the main Consolidated-Florence vein has changed somewhat, as considerable copper has been encountered below the 700-foot horizon. It will, therefore, be necessary to make tests in flotation to treat these copper ores and the enlargement of the mill would depend entirely upon the success of their treatment. Copper undoubtedly will be encountered in the lower levels of the Florence Mine.

WATER:

Water for milling purposes can be obtained from the various shafts under lease from the Eastern Exploration Company and as its level is lowered to bottom of these shafts, provision can be made to pump from the Deep Shaft. Tests should be made of the water for its acidity and copper content so as to guardagainst interference with cyanide leaching process.

Additional water for milling operations can presumably be obtained from the Goldfield Consolidated Water Company, but there may be some question as to the quantity, due to the fact that the treatment of the tailings of the Goldfield Consolidated Mines Company is in operation at the present time, this company being headed by Mr. Bradshaw. The quantity used by them was not ascertained by the writer; however, there is no water problem for milling operations as far as can be observed.

COSTS: (Mining Milling)

Labor in the Goldfield district does not present any problem. Wages are uniform and compare favorably with other camps. Miners, muckers, trammers, hoistmen, etc., can be employed within a range of $4.00 to $6.00 per shift of eight hours. The intimate knowledge by the Management of the local labor available insures efficiency in selection and minimizes the possibility of a large turnover. Present workings from which extraction of ore is to be made should afford low mining costs. Stopes have in many instances remained open for more than twenty years without much timbering. The writer feels confident that the cost per ton delivered in mill feed bin, should not exceed $3.50 per ton.

Past experience of actual mill operation in another section of the state with less favorable conditions prompts the statement that a milling cost of not more than $1.50 per ton can be expected. Total cost of mining and milling, therefore, can be visualized within $5.00 per ton.

EQUIPMENT:

The Deep Mines Company has sufficient pumping machinery, hoisting equipment, and housing facilities to supply the Florence Mine. Rails, ore cars, air and pipe lines, electric wiring, air-drills, etc., will have to be acquired for the proper operation of the Mine.

LEASES:

The Eastern Exploration Company, subsidiary of the Calumet & Hecla Mining Company, has made during the past year an extensive

surface to reconnaisance and survey over an area of six miles long from north to south, and three miles wide, from west to east, plotting the veins, croppings, faults, uplift formations, trenches, shafts, etc., over the entire area. It is the most complete source of information of the area gathered up to date. It will serve as a guide to future operations. Many samples of ore croppings and studies of geological formation of rocks are noted. A typical glass vertical section is being prepared by its staff.

The Exploration Company repaired the Laguna, Clermont, Grizzly Bear, and Merger Shafts with the purpose of starting their explorations abovethe 600-foot levels of the ground under contract with the Goldfield Consolidated Mines Company; likewise, the leased area of the Deep Mines Company, notably through the Merger Shaft on the St. Ives Claim.

The Chief of its Geological Department who has been familiar with the camp since early in its history, hasadvanced the theory that further east a series of veins parallel and dipping in the same direction with the Main Consolidated-Florence Vein, should be encountered through this exploration work, and eventually should result in another large producing mine.

The Management of the Exploration Company extended the courtesy to the writer to inspect the new workings in the Clermont Shaft area and examine their latest discovery some 300 feet east of the Shaft on the 300foot level. The length of the vein laterally opened was approximately 50 feet and width about 15 feet, no walls being exposed, the vein being entirely oxidized, and curving to the southwest. The vein where encountered appears to be on an anticlinal fold and at what seemed to be the axis or point of greatest bulge. The samples taken from the face of the drift panned considerable coarse gold. The average gold content of the vein was stated to be two ounces ($70.00) to the ton, and a sample from the face across five feet, assayed ten ounces ($350.00) to the ton. Subsequent information received at this time of writing advises a lense opened up with assays as high as 50 ounces ($1750.00) to the ton.

In the Merger Shaft at a point 200 feet below the collar, the shaft passed through a small stringer, or oxidized vein. It has been reported that the Company drifted east from the shaft on the 300-foot level and encountered this vein average two ounces ($70.00) to the ton.

These discoveries, while not being as yet conclusive evidence of the existence of large bodies of ore, are of sufficient importance to warrant a continuance of the Exploration Company's development program.

The Deep Mines Company may well be encouraged and justified in the expectation of royalties from its lease to the Exploration Company.

Access through the Laguna Shaft was obtained to the 600-foot level and the character of the ore below this level was examined in a prospect-hole previously worked by a leaser. There is considerable copper present. Further exploration on the drift on this same level, connecting with the Clermont Shaft, and from this latter along a drift west to the vicinity of the Mohawk Shaft, the ground above this level in all directions was badly caved and from which many hundreds of thousands of tons of ore were extracted by the Goldfield Consolidated Mining Company during their operations.

It was noted that there still were portions of this caved ground, or parts adjacent to it, that were being robbed by leasers. The indications are that the Goldfield Consolidated Mines Company ceased its milling operations when the ores were depleted to this level; also, that they encountered copper below this horizon which necessitated a change in their method of treatment of the ores.

The Goldfield Deep Mines Company under its lease with the Eastern Exploration Company is, therefore, faced with the problem of ascertaining the best method of treatment of this copper ore. There is no reason to doubt that considerable tonnage can be developed in the future below this level.

Continuation of the vein in depth is assured by reason of The Deep Mines Shaft having penetrated this vein system at approximately 2,600-foot level. With Diamond Drill prospect-hole passing through the vein at 2,780-foot horizon into the footwall. The horizontal distance between the Clermont and Deep Mines Shaft to the east is nearly 4,800 feet.

DEEP MINES SHAFT:

The surface at the Deep Mines Shaft was visited and the head frame, the hoisting machinery, and buildings, together with the various pumps, all seemed to be in good order. It was stated by the Management that the Shaft was badly in need of repair and the water level was at the 1,600-foot stage. For the present this Shaft might be used for pumping water to supply milling operations, if it can be kept open without great expense.

BLACK BUTTE MINE:

The Black Butte Mine, about five miles to the northeast, beyond Vindicator Mountain, is a massive, conical-shaped outcropping of silicified quartz, very hard, that has withstood weathering and disintegration. There are several shafts of varying depths located along its base. Some pockets of high-grade

ore have been found and shipped, according to statements of officers of the Company. None of the underground workings were visited. The writer does not consider it as of any immediate importance for development operations. It presents possibilities, however, and should be considered at some later date after operations have taken routine shape at the Florence Mine.

CONCLUSIONS:

The Deep Mines Company have sufficient ore reserves in the Florence Group to supply a 200-ton mill for at least one year. The average grade of ore available will afford a profit.

There is sufficient water for milling operations, pumping machinery being available for this purpose.

There is sufficient major equipment for hoisting the ore.

The main Shaft is in fairly good repair.

The drifts on the various levels to the stopes can be put in shape reasonably quick to gain access to all the stopes.

Development work below the 500-foot level should be done at a reasonbly low cost since no shaft sinking will be necessary.

The leases with the Eastern Exploration Company are advantageous to the Deep Mines Company.

The Company might expect returns from royalties at an early date in view of the discoveries of the Eastern Exploration Company on the St. Ives Claim through the Merger Shaft.

RECOMMENDATIONS:

It is recommended that the Company first acquire the sum of $250,000 to be expended for the following purposes:

| | | |
|---|---|---|
| 1. | Development - Florence Group | $ 50,000 |
| 2. | Preparation of the Florence Mine for extraction of ores | 25,000 |
| 3. | Working capital and inventory | 50,000 |
| 4. | Erection of 200-ton mill | 125,000 |

Flotation tests made of copper ores from the lower levels in the Consolidated Mines vein in sufficient large quantity by one or more flotation Engineering Companies.

Tests of the water for acidity and copper content.

No mining operations on company account in the Consolidated vein under 99-year lease until the Company is assured that the Exploration Company definitely exercises its option to purchase the Consolidated Mining Company's properties and that it will continue development work under the lease arrangement on Deep Mines Company ground.

G. C. Snyman
Mining Engineer