4730 0002

(15)

Item 2

R E P O R T

CONCERNING FIVE LODE CLAIMS

DESIGNATED OAS NOS. 1, 2, 3, 4, & 5

COMPRISING THE OAS IRON MINE

Author: Stevenson
Date 1972
Map missing

General

The Oas Iron Mine consists of five contiguous lode claims, held by amended locations, situate on the West Ford of the North Fork and on the North Fork of White Rock Canyon in the Stillwater Range of mountains, Unknown Mining District, Churchill County, Nevada. The claims were purchased from the Iron Hat Mining Coporation which made the original locations in 1959.

Location and Geography

The Oas Iron Mine is located on the easterly slope of the Stillwater Range in the north central portion of Churchill County, Nevada. Fallen, Nevada, is approximately 55 miles South 51° westerly; and Lovelock, Nevada, is approximately 30 miles North 59° Westerly, both distances being approximate airline distances. The northerly edge of the Humboldt Salt Marsh, in the Valley along the easterly side of the Stillwater Range known as Dixie Valley, is located approximately 4 miles away on a South 70° Easterly course. Buena Vista Hills, located in Mineral Basin northerly of the Carson Sink, is westerly about 5 miles.

Climate, Roads and Facilities

The climate of the area is desert, with an average annual rainfall of 5.6 inches. Most of the precipitation occurs as snow during the months of December, January and February, with occasional showers in the spring or fall months. At rare intervals, torrential rain of brief duration cause flooding in the canyons and damage to the roads.

The climate of the area is temperate, with temperatures up to 100° in the summer and down to zero in the winter. The air is dry; and because of prevailing winds, working conditions are good. Year-around mining is the custom, although a few days may be lost during the winter while roads are being cleared of snow, and occasionally a few hours or a day may be lost during a rare summer cloudburst to effect road repairs.

The Stillwater Range of mountains, which rises a maximum elevation of approximately 8,000 feet, is very steep and intricately carved by erosion into many steep canyons, cliffs, draws, and ravines. The mountains rise from comparatively flat valleys having an approximate elevation of 3,400 feet. The Carson Sink Valley lies westerly of the Stillwater Range, and Dixie Valley on the easterly side. Both valleys are covered with a sparse growth of sagebrush, greasewood and grass, while the Stillwater Range is covered with a thin growth of pinon pine trees, juniper trees and grass.

The roads into the area are presently unimproved dirt roads. Two methods of reaching the Oas Iron Mine by road are possible: (1) from Lovelock, Nevada; and (2) from Fallon, Nevada.

It is 39 miles from Lovelock, Nevada, to the Oas No. 1 claim. Colada, the Southern Pacific Railroad shipping station for iron ore, is located 7 miles northeasterly or Lovelock, Nevada, on paved U. S. Highway 40 and 95. From Colada, the distance to the Oas Lode Claim No. 1 is 32 miles of dirt road.

No electric power or telephone services are available in the area. All power requirements will have to be supplied by gasoline or diesel engines whose fuel must be hauled from Lovelock, Nevada.

Property

The Oas Iron Mine consists of five contiguous lode mining claims, each 600 feet wide by 1,500 feet long, as shown on the accompanying map. All five claims have been marked on the ground by four exterior corners and two center side corners, making a total of six corners per claim. A discovery post was also set within each claim where mineral in place was found. All corners consist of tree stumps 5 or more inches in diameter, the trees being cut off more than 4½ feet above the ground, or rock mounds built 4 feet in diameter and more than 4½ feet high. All tree stumps used as corners or discovery posts have either rock or rock and dirt mounds built around them, the mounds being 4 feet in diameter and over 3 feet high. Thus, all requirements of both Nevada State mining laws and the United States mining laws have been rigidly observed in the beating of said claims. It should also be noted that the claims as staked on the ground were deliberately made a little short of the 600-and 1,500-foot dimensions called for in the location notices. This was done to eliminate any chance error in the Branten Survey that would result in leaving a narrow sliver of land "open" between the claims.

Geology

Near the close of Jurassic time, the Sierra Nevada batholith was intruded, resulting in the uplift of Western Nevada to a high upland plateau, and granitic masses that appear to be satellitic of the intrusion extend well into Nevada. Overlying formations consist of Triassic and Jurassic sediments and lavas resting upon Paleozoic beds, and they also contain limestones. The Stillwater Range was elevated by block faulting as a herst mountain, probably during Tertiary (?) time. Uplift of the mountain range is continuing, or has been resumed, as evidenced by the approximately 20-mile long fault in the easterly flank of the Range having a maximum vertical displacement of 20 feet, which occurred during 1954. Other smaller faults are noted without such precise dating, but have obviously occurred this century. Tertiary lavas and associated nonmarine sediments are conspicuous surface features. The Stillwater Range is approximately 8 miles wide.

Rapid erosion of the Stillwater Range, due to steep slopes, has resulted in severe dissection of the mountains by deep canyons, steep draws and ravines, all of which are narrow and the bottoms of which are strewn with boulders, some of very large size. Alluvial fans built up at the mouths of the many canyons, dissecting the Stillwater Range, have resulted in a piedmont alluvial plain flanking both sides of the range.

In the area of the Stillwater Range, here under consideration, erosion has exposed in descending order a massive limestone Triassic (?) of unknown thickness. The only remaining parts of the limestone are erosional remnants and relatively small blocks faulted out of position. Underlying the limestone is an andesite flow, probably also of Triassic (?) age and having a thickness of about 500 feet. Some of the andesite shows amygdaleidal structure, the amygdules being filled with quartz or calcite. Tressicated structure is found near the base of the andesite flow. Underlying the andesite flow, the hood of a diorite stock is partly exposed, the diorite being of fine-to-medium-grain, and without appreciable quartz. On part of the Oas Lode Claims Nos. 1, 2 and 3 and near them, it was noted that scapolitization of some of the diorite had taken place, plagioclase being replaced by a scapolite mineral, probably wernerite; and such scapolitization was not noted elsewhere in the area. The scapolite mineral shows almost complete orientation, one side of a block of diorite showing closely scattered faces of scapolite of quite uniform size, being from 1/2 inch to 5/8 inch across; and the side of the diorite block being at approximately right angles to that showing scapolite faces shows scapolite edges, the crystals being about 1/20th of an inch thick.

Faulting in the immediate vicinity of the Oas Iron Mine is of relatively small displacement, and is not believed to offer any problems for mining. No late pyrite mineralization has taken place due to magmatic gases ascending fault fissures, as has occurred at the Cooper Hematite Iron Pit.

Economic Geology and Ore Bodies

The Qas Iron Mine lies near the easterly limits of an iron province that extends in a generally easterly and westerly direction for approximately 15 miles, and may have a maximum width of 4¼ miles. The westerly length of the province lies in what is locally called "Mineral Basin"; and extends easterly through the Buena Vista Hills, lying nearly adjacent to the westerly flank of the Stillwater Range and on easterly into the Stillwater Range.

Commercial iron mineralization has been found in only a small fraction of the iron province, the ore occurring in scattered ore bodies of various kinds and sizes. The ore bodies and mineralized areas, while irregular in detail, appear to be controlled by faults and shear zones that impart definite trends. The ore bodies adopt several different forms: (1) as disseminated bodies of irregular shape, (2) as concentrated masses of irregular shape, (3) as fissure veins or pipes. Principal ore minerals are crystalline magnetite with lesser amounts of primary crystalline hematite, usually in the proportion of about 75 per cent magnetite and 25 per cent hematite. Both minerals are obviously contemperaneous, since they are usually mixed, although sometimes segregated locally. The evidence to date indicates that the ore bodies occur in or closely adjacent to diorite, sometimes extending into overlying formations.

The ore bodies are of pneumatolytic origin, have been deposited by metasomatic processes, and are relatively near to their source in the parent magma. Mineralizing agencies consisting of metal laden magmatic gases in gasseous form, escaping or expelled from the cooling but still molten magma, made their way into the solidified diorite hood of the magma by means of the capillary and subcapillary pore systems, to deposit magnetite and hematite in the upper endethermal space zone, either by filling pre-existing channels when available or by the more or less complete replacement of the original constituents of the diorite and adjacent formations. The iron ore tends to be relatively pure, containing almost no other metals and only small quantities of sulphur and phospherus.

Two ore bodies occur in the Oas group of claims, and the largest one will be considered first. On Oas Lode Claim No. 1, a magnetite outcrop occurs, having tbe general shape of a lamb chop, and as shown on the map. Several small magnetite outcrops occur in the area adjacent to the northeasterly side of the magnetite ore body, shown on the map as "probable magnetite ore area". It is believed that further exploration and development work will show that the magnetite ore body will extend northeasterly to include all of the area designated as "probable magnetite ore area".

The magnetite ore body, as delineated, contains in excess of 750,000 tons of magnetite ore. This figure was obtained by calculating the cubic content of the ore and allowing 10 cubic feet per ton (a conservative figure) of ore in place. In calculating the cubic content of the ore body, the depth was taken as 150 feet. The 150-feet depth figure is very conservative, as the usual practice in the mining industry is to use one-half the length of the ore body, and this ore body is over 650 feet long. The southerly or uphill end of the ore body is approximately 300 feet higher than the northerly or downhill end. Similarly, the ore body extension, indicated as "probable magnetite ore area", would contain an additional 900,000 tons of magnetite ore by using the same data, namely, 150 feet depth and 10 cubic feet per ton of ore in place.

Erosion and weathering have resulted in cliffs and steep hillsides in the area where the Oas claims are located; and the canyon, draws and hillsides are littered with detrital material consisting of loose rocks and dirt. In many places, the detrital material is very deep and completely hides bedrock. The assessment work done the past summer was very beneficial in helping to outline the limits of the magnetite ore body and to cast further light on the nature of the deposit. Most of the iron deposits presently being mined in the district, including W. M. Fisk's deposits on the Circle Group of claims, are largely controlled by fault and shear zones that impart fairly definite trends to the ore bodies; and at first, it was believed that the ore bodies on the Oas Group of claims were of the same general type. Study of the ore body on the Oas Lode Claim No. 1 during assessment work indicated that the ore body is not of the usual type being mined in the district, but is more probably a breccia pipe ore body. This is a very fortunate development because breccia pipe ore bodies, while not nearly as numerous as other type ore bodies, commonly produce many times as much ore as can be extracted from other type ore bodies. Funds for assessment work were exhausted before determination could be made as to whether or not the breccia pipe was of the explosion or collapse type. For the same reason, the surface outline of the pipe was not determined nor the easterly and northeasterly exterior limits of the ore. Results of the assessment work completed this year did, however, supply sufficient information to make it appear extremely likely that the area designated "probable magnetite ore area" will indeed be found to be ore when further work in said area is undertaken. Also, results of such work could point the way to additional ore to the east and north of said area.

When breccia pipes are mineralized, the deposition of ore is dependent on many factors, those governing size being, besides type of wall rock and breccia filling, the size of the pipe and the amount of mineralizing agencies available for deposition. When a breccia pipe is mineralized, the interstices between the fragments are first occupied by deposited minerals, and then, if the mineralizing agencies are sufficiently voluminous, the rock fragments themselves may be more or less replaced by minerals. Where the pipe is small, the entire pipe may be mineralized; but where it is large, mineralization may be confined to a portion of the pipe, in which case, sometimes only the central core and sometimes only the periphery or a segment of the periphery may be mineralized, this being due to the fact that the pipe offers a larger channel for movement than the mineralizing agencies require, so that they actually utilize only a portion of the entire area. Pipes, while somewhat irregular, commonly have a more or less circular or oval outline; and it appears that the magnetite ore body on the Oas Lode Claim No. 1 occupies at least the westerly periphery of a pipe. Considerable work remains to be done to determine how much more of the pipe is mineralized. The hillside areas on Oas Lode Claim No. 2 lying easterly of the mineralized area of Oas Lode Claim No. 1, as indicated on the map, would appear to offer the possibility of high rewards for further prospecting, because considerable float occurs there that has good magnetite mineralization and because some places of magnetite ore are also included in the detritus covering the hillside. Pipe fragments that have not been replaced or only partly replaced by magnetite occur at several places in the Oas Lode Claim No. 1 ore body. Three pipe fragments of large size were observed during early examination of the ore body near the base of the magnetite outcrops and extending downward below the detritus surface. Such occurances could have been interpreted as shallow depths of ore lying on diorite bedrock, and it was not until completion of assessment work that excavations definitely proved the diorite to be breccia fragments included in the ore and that the ore did, in fact, extend on downward without interruption. It is recommended that such occurrences be kept well in mind during future prospecting and development, for it is certain that other large unreplaced or partly replaced breccia fragments will be encountered before the complete ore body is defined.

The magnetite ore on the Oas Lode Claim No. 1 is shiny black on the outcrops, with a metallic luster, very heavy, massive, dense, hard, yields a black streak with a few red specks on the streak plate, and is strongly magnetic. The red specks on the streak plate indicate that some hematite occurs with the magnetite. The magnetite mineral corresponds to the composition Fe_3O_4 or FeO/Fe_2O_3 and the hematite mineral to Fe_2O_3. The magnetite is compact, of fine-to medium-grain texture; and occasional octahedron crystals may be distinguished. No parting or cleavage were observed, the ore breaking with an uneven fracture. Some irregular jointing has taken place, with some joints having been recomented with silica or calcite.

A unique feature of the ore is radiating crystals of mineral along nearly straight lines or curving lines, the lines being commonly less than a foot long, but sometimes extending for several feet. The crystals extend outward from both sides of the lines at nearly right angles to the lines, commonly for about 1/4 inch, but sometimes as much as 1 inch. The crystals are of the hexagonal system, showing exaggerated hemimorphic development; and vary in color from milky white to buff to light tan, and sometimes show a tinge of orange. On fresh broken faces of ore, these light colored minerals stand out with startling contrast against the black magnetite, and resemble wide stitching with light colored thread of a rent in dark cloth. Because no definite determination of the minerals was made, they will be referred to here as "stitching" minerals. Breaking of a large number of pieces of ore indicates that the lines or "rents" commonly have one long dimension, as given above; and the other dimension commonly approximates about half the length of the up to a maximum of about 10 inches in those lines extending for several feet. At one point in the ore body, located where the final letter "E" of the word "magnetite", designating "magnetite ore body", is shown on the map, a series of long curving lines and wherls that include two complete circles occur on the face of a block of magnetite about 10 feet high. This is the greatest concentration of stitching minerals noted in the entire ore body, extending from the base of the ore up the face of the block and on across its top. It is assumed that the stitching minerals are partly composed of apatite because samples taken for assay (see pages 12 through 16) contained larger amounts of phosphorus and fluorine in those samples showing the largest amount of stitching minerals. The amount of phosphorus and fluorine present are, however, insufficient to indicate that all the stitching minerals are apatite; and a correct determination of their identity must await further investigation. Reference to the literature indicates no case where similar occurence of stitching minerals have been described. Only one reference was found of interest. Waldemar Lindgren in his MINERAL DEPOSITS, Fourth Edition, McGraw-Hill Book Co., Inc. 1933, on Page 790 <u>et seq</u>. states:

> "The great magnetite deposits in the extreme northern part of Sweden, the largest in the world, . . . for many years remained unworked on account of their high percentage of phosphorus, which, since the invention of the Thomas process, is no longer objectionable. The deposit at Kiruna is compact and fine-grained, consisting of magnetite and apatite in intimate intergrowth, apparently having crystallized together . . . The apatite seems to have crystallized first . . . In places veinlets of apatite, suggesting a   , are observed in the ore."

Assays show that sulphur occurs in the ore, and close inspection has so far failed to find the mode of occurrence. Pyrite and marcasite are the usual sulphide minerals in iron deposits, but it appears reasonable to conclude that none is present in the Oas Lode Claim No. 1 deposit, since the closest scrutiny failed to reveal a single crystal of either of them, and both are easy to identify, as pyrite is bright yellow and marcasite is bright silver color. Arsenopyrite may also be ruled out as being present because it is nearly as easy to identify as marcasite, but the conclusive proof is that assays show no arsenic present. Assays likewise show that no copper, lead or zinc are present; hence, sulphide minerals of those metals may be eliminated as a source of sulphur. Two other possibilities remain to investigate to account for the presence of sulphur in the ore body: (1) the

(Text continued on page 17)

ASSAYS OF 14 SAMPLES

Taken from the Oas Lode Claim No. 1 Ore Body

Assays Made by Mr. G. E. White

of Curtis & Tempkins, Ltd., Lovelock, Nevada

Sampling was started at the northerly or downhill end of the ore body and progressed numerically uphill, the upper end of the ore body being approximately 300 feet higher than the lower end.

Samples 2M1 through 2M7 were taken from the northerly half or downhill end of the ore body.

Samples 2M8 through 2M14 were taken from the southerly half or uphill end of the ore body.

Samples	Per Cent Iron (Fe)	Per Cent Phosphorus (P)	Per Cent Sulphur (S)
2M1	56.9%	0.62%	0.03%
2M2	64.9%	0.40%	0.01%
2M3	68.4%	0.15%	0.01%
2M4	65.0%	0.23%	0.61%
2M5	61.1%	1.24%	0.02%
2M6	62.4%	1.13%	0.02%
2M7	61.1%	0.93%	0.03%
2M8	62.4%	0.94%	0.05%
2M9	63.9%	0.28%	0.12%
2M10	60.4%	0.53%	0.07%
2M11	62.9%	0.54%	0.06%
2M12	65.6%	0.10%	0.15%
2M13	65.9%	0.09%	0.16%
2M14	67.4%	0.25%	0.12%

Sample	Per Cent Silica (SiO_2)	Per Cent Alumina (Al_2O_3)	Per Cent Lime (CaO)
2M1	12.60%	2.30%	1.51%
2M2	3.40%	0.62%	1.27%
2M3	2.50%	0.45%	0.38%
2M4	4.35%	0.78%	0.91%
2M5	4.60%	0.82%	3.03%
2M6	6.00%	1.11%	2.99%
2M7	5.14%	0.96%	5.45%
2M8	6.90%	0.51%	4.49%
2M9	4.55%	0.65%	4.31%
2M10	9.00%	nil	8.51%
2M11	5.80%	0.51%	3.59%
2M12	5.65%	nil	2.10%
2M13	3.22%	nil	1.75%
2M14	2.19%	nil	2.23%

Sample 2M1, a 10-foot long moil cut, channel sample, taken from near the discovery post, was cut along a quartz-filled joint fracture to determine maximum silica. All other samples were taken without regard to whether silica was present or not, and hence indicate more nearly the true amount of silica in the ore. All samples were taken without regard to whether alumina and lime were present or not, hence show the true amount in the ore. By domestic iron ore standards, Oas Iron Mine ore would be classed as ore with low silica and alumina content.

Sample	Per Cent Copper (Cu)	Per Cent Nickel (Ni)	Per Cent Lead (Pb)
2M1	nil	0.02%	nil
2M2	nil	0.01%	nil
2M3	nil	0.02%	nil
2M4	nil	0.02%	nil
2M5	nil	0.01%	nil
2M6	nil	0.02%	nil
2M7	nil	0.01%	nil
2M8	nil	0.01%	nil
2M9	nil	0.01%	nil
2M10	nil	0.02%	nil
2M11	nil	0.01%	nil
2M12	nil	0.01%	nil
2M13	nil	0.02%	nil
2M14	nil	0.01%	nil

No sulphide minerals of copper, lead and zinc were observed in the ore, and assays show they are absent.

All samples contained some nickel, but within the maximum amount permitted, without penalty, by domestic iron ore-buying schedules.

Assays show the ore to contain no arsenic minerals.

Sample	Per Cent Zinc (Zn)	Per Cent Arsenic (As)	Per Cent Manganese (Mn)
2M1	nil	nil	0.03%
2M2	nil	nil	0.03%
2M3	nil	nil	0.02%
2M4	nil	nil	0.04%
2M5	nil	nil	0.03%
2M6	nil	nil	0.04%
2M7	nil	nil	0.02%
2M8	nil	nil	0.02%
2M9	nil	nil	0.03%
2M10	nil	nil	0.02%
2M11	nil	nil	0.01%
2M12	nil	nil	0.02%
2M13	nil	nil	0.02%
2M14	nil	nil	0.03%

Stitching minerals in the ore, as defined in the text, are assumed to be apatite, or more properly, partly apatite, because samples taken to include visible stitching minerals contain more phosphorus and fluorine than samples taken from the near vicinity of stitching minerals that contain only a few visible, light colored minerals. Similarly, samples that do not show any visible stitching minerals contain less phosphorus and fluorine than samples from the near vicinity of stitching minerals showing a few light colored minerals.

Sample	Per Cent Tin (Sn)	(Parts per million) Fluorine (Fl)	Stitching Minerals Visible in Ore Apatite (?)
2M1	nil	620 ppm	Few
2M2	nil	350 ppm	No
2M3	nil	150 ppm	No
2M4	nil	230 ppm	Few
2M5	nil	1200 ppm	Yes
2M6	nil	1100 ppm	Yes
2M7	nil	900 ppm	Yes
2M8	nil	890 ppm	Yes
2M9	nil	330 ppm	Few
2M10	nil	400 ppm	Yes
2M11	nil	475 ppm	Few
2M12	nil	150 ppm	No
2M13	nil	32 ppm	No
2M14	nil	315 ppm	Yes

Domestic iron ore-buying schedules limit the maximum allowable fluorine at 600 parts per million and the maximum phosphorus at 0.40 per cent.

presence of pyrrhetite as a primary mineral, and (2) the possibility that leaching by weathering of rocks located up the hill from the ore body has deposited secondary sulphur minerals in the uphill portion or the ore body in greatest amounts, and least amounts in the part of the ore body farthest downhill.

Pyrrhetite is a hard, heavy mineral with a metallic luster, practically always of massive structure and ranging in color from brownish bronze to black. Hence it is extremely difficult to recognize when associated with magnetite, especially if occurring as fine grains. Pyrrhetite often carries a small amount of nickel, and it is possibly of some significance to note that all 14 samples taken from the ore body showed nickel in amounts from 0.01 to 0.02 per cent. In the upper endethermal space zone, where elemental oxygen is abundant in magmatic gases, and is the most active precipitating agent, primary iron oxides consisting of magnetite and hematite are deposited in large quantity; but in the overlying hypethermal space zone, where the supply of oxygen has become considerably depleted and has been supplanted by hydrogen sulphide as the most active precipitating agent, pyrrhetite and pyrite are formed. Pyrrhetite is usually formed where the supply of sulphur is low because it only takes about half as much sulphur to form pyrrhetite as it does to form pyrite. Pyrrhetite and pyrite are hence always confined to the hypethermal space zone and above, except in late time zoning, when the zone descends somewhat, due to lowering of temperature and pressure. Thus, it is reasonable to expect that the top of an endothermal magnetite ore body may contain some pyrrhetite or pyrite where it merges with the overlying hypothermal zone, and would contain lesser amounts of pyrrhetite with depth. The magnetite ore body on the Oas Lode Claim No. 1 is approximately 300 feet higher on the southerly end than on the northerly end near the center of the claim. It may be of considerable significance to note that, of the 14 samples taken from the ore body for assay, all samples taken from the northerly or lower end showed less than 0.05 per cent sulphur and that all samples taken from the southerly or higher end of the ore body assayed from 0.06 to 0.18 per cent sulphur.

When rocks containing pyrite and other metallic sulphide minerals are oxidized by weathering, the sulphur from the minerals is oxidized to sulphuric acid. The sulphuric acid is removed by moisture from where it is formed, and is usually carried underground where it reacts with other minerals to form sulphates, some soluble , that are carried away; and the insoluble or nearly insoluble sulphates are deposited in place. Sometimes, due to impervious beds, or for other reasons that prevent the sulphuric acid from descending directly into the ground at least some of the sulphuric acid may be transported down a hill to where it may react with minerals. Often sulphate minerals have been found for considerable distances around weathering pyrite, and often to considerable depths. There are appreciable amounts of calcite in the Oas Lode Claim No. 1 ore body; and if sulphuric acid is being introduced into it by weathering, the sulphuric acid would react with the calcium carbonate to form calcium sulphate, which is the relatively insoluble mineral gypsum. No identification of gypsum has been made in the ore body, and gypsum may easily have been missed, considering the narrow jointing in the ore, the tiny pore spaces in the fine-to medium-grain magnetite, together with the relatively small amount sought and the many forms in which gypsum may occur.

In any event, if gypsum is the sulphur-bearing mineral in the ore body, it should be found most plentiful on the uphill portion of the ore body closest to the potential source of the sulphuric acid where the sulphur assays are highest. Assays of the 14 samples show that lime is most plentiful in the uphill portion of the ore body.

Further work will be required to determine whether pyrrhetite or gypsum is the mineral containing sulphur in the Oas Lode Claim No. 1 ore body. If pyrrhetite is the source, there is reasonable expectation that only the top portion of the uphill end of the ore body will contain sulphur in excess of 0.05 per cent, which is the allowable maximum for domestic iron ore-buying schedules. If the source of sulphur is found to be gypsum, then the expectation is that most, if not all, of the uphill portion of the ore body will be found to contain sulphur in excess of 0.05 per cent.

A small, post-mineral, normal fault with small displacement cuts the Oas Lode Claim No. 1 ore body toward its upper end near the southwesterly edge of the ore body, but it is not believed that the fault will create any special problems for mining.

A second Oas Iron Mind ore body outcrops on Oas Lode Claim No. 3, as shown on the map. The ore body occurs as a magnetite fissure filling, the vein varying in width from a minimum of about 3 feet, where the vein disappears under an andesite cliff near the south end of the claim, to a maximum width of approximately 15 feet at the cut shown on the map; and extends northerly where it disappears under a talus slope, the vein, as presently seen, having a total length of approximately 350 feet with an average width of 10 feet. Little work was done on the magnetite vein, but if appears that the vein is contained entirely within diorite walls and has a nearly vertical attitude. Discovery of the northerly extension of the vein under the talus slope would appear to be a reasonable expectation, as the last exposure shows good strength and regularity. Discovery of an economic southerly extension of the vein appears much more doubtful, the vein exhibiting narrowing and a tendency to irregularity. The vein is typically of the upper endothermal space zone.

Assuming an economic depth of 100 feet (which appears conservative) and using 10 cubic feet per ton, the ore body contains 35,000 tons of magnetite ore. Further speculation as to the size of the vein ore body must await exploration and development.

The magnetite ore on the outcrop of the Oas Lode Claim No. 3 vein is black with a metallic luster, heavy, massive, dense, hard, strongly magnetic; and yields a black streak with a few red specks on the streak plate. The red specks on the streak plate indicate that some primary crystalline hematite is mixed with magnetite. The compact ore is fine-grained and shows joint cracks. No parting or cleavage were observed, the ore breaking with an uneven fracture. No samples for assay were taken; but the character of the ore indicates a high iron content, probably 60 per cent or over. No impurities were observed in the ore by optical examination, and assays must be made to evaluate the commercial possibilities.

In addition to the two ore bodies above-described, iron ore float occurs on other areas of the Oas Lode Claims, as shown on the map; and prospecting may indicate additional appreciable quantities of commercial ore.

Summary

The Oas Iron Mind ore bodies, as presently determined, constitute a valuable asset. As a blending iron ore to be sold for use in the same manner as the ores from the Circle Group of claims, there is available 750,000 tons from the Oas Lode Claim No. 1 and 35,000 tons from the Oas Lode Claim No. 3, making a total of 785,000 tons. If exploration and development work were undertaken as hereinbefore discussed, there is the reasonable expectation that the ore reserves would be very considerably increased. Blending iron ores are presently being sorted in the district; and those with sufficiently low sulphur and phosphorus content, of a size over 1¼ inches, are sold domestically; the sizes less than 1¼ inches, together with those of high sulphur and phosphorus content, are sold at a lesser price to the Japanese.

A considerable amount of the Oas Lode Claim No. 1 ore body would qualify as domestic iron ore as far as the sulphur content is concerned; and there is the possibility, as previously discussed, that all, or nearly all of the ore would average less than 0.05 per cent sulphur. The solution of the sulphur problem appears to be well within scope of normal exploration and development work.

Solution of the phosphorus problem does not at this time appear as well defined. Possibly this is due simply to the lack of information. Assays from 14 samples indicate the Oas Lode Claim No. 1 ore body to have an average phosphorus content of approximately 0.55 per cent. Assays range from a low of 0.09 per cent to a high of 1.24 per cent. Only four samples were taken that did not show stitching minerals, the four samples averaging 0.20 per cent phosphorus. Four samples, taken from ore closely adjacent to stitching minerals and showing a few light colored minerals, had an average phosphorus assay of 0.44 per cent. Six samples taken from outcrops showing one or more bands of stitching minerals had an average of 0.86 per cent phosphorus. Samples taken to date were more for the purpose of definitely fixing the source of phosphorus in the ore rather than attempting a determination of the average phosphorus content. The table on the next page shows the phosphorus and fluorine assays, listing them to show the presence of visible stitching minerals in the ore samples.

Observation of the magnetite outcrop of the Oas Lode Claim No. 1 ore body doesn't reveal the stitching minerals to be a conspicuous feature except in one area. Closer inspection, however, reveals many more bands of stitching minerals throughout the ore body. By visual means, it is difficult, if not impossible, to approximate the relative proportion of ore containing stitching minerals and the proportion that does not contain visible stitching minerals. Considerable study of the relationship of the amount of ore that contains visible stitching minerals to the amount that does not show stitching minerals leads to the conclusion that the 14 assays listed do not accurately reflect, on the surface of the ore body, the true proportion of high phosphorus ore to low phosphorus ore. Instead, it is believed that the proportion of low phosphorus ore in the ore body is greater than shown by the 14 assays. Further exploration and development work might show that the Oas Lode Claim No. 1 ore body would have an average phosphorus content low enough to qualify as domestic ore, or sufficiently low not to incur too heavy a phosphorus penalty.

Magnetite ore used as a source of iron for conversion to steel is presently finding a rising market as a heavy aggregate.

Visible Stitching Minerals in Ore

Sample	Yes		Few		None	
	P	Fl	P	Fl	P	Fl
2M1			0.62%	620		
2M2					0.40%	350
2M3					0.15%	150
2M4			0.23%	230		
2M5	1.24%	1200				
2M6	1.13%	1100				
2M7	0.98%	900				
2M8	0.94%	890				
2M9			0.38%	380		
2M10	0.53%	400				
2M11			0.54%	475		
2M12					0.19%	150
2M13					0.09%	82
2M14	0.35%	315				

* *

The construction industry is using considerable amounts of heavy aggregate at prices considerably above that obtained for magnetite ore used for steel. Specifications for heavy aggregate used by the construction industry are wide enough so that heavy aggregate is usually obtained from the nearest source deposit, so that no large market exists for Lovelock, Nevada, area. Specifications for heavy aggregate used for shielding of nuclear reactors is, however, under the complete jurisdiction of the Atomic Energy Commission, and considerable difficulty has been experienced in the past to find enough magnetite ore to meet the very high specifications which are rigidly enforced. Mineral Materials, Inc., Lovelock, Nevada (previously a major iron ore producer of the Mineral Basin District, and which has optioned its properties to the United States Steel Corporation and suspended its operations), formerly supplied all the heavy aggregate used for nuclear shielding in Western United States at prices approximating three times what the ore would bring for steel. Western United States' consumption is about 40 per cent of the total national market for this material. Considerable difficulty was encountered by Minerals Materials in obtaining enough magnetite ore of the proper specific gravity, so that often ores were purchased from other operators in the district in order to fill a contract. The reason so much difficulty was experienced in maintaining a specific gravity of over 4.4 appears to be due to miarelitic cavities occurring rather generally in Mineral Basin area. The cavities are often partly filled with red earthy hematite or limenite; and the reason for the presence of so many cavities in the ore is unknown. Research at the State of Nevada Bureau of Mines Library and the Nevada School of Mines Library found no mention of the subject. Few cavities, and those much smaller than Mineral Basin ore cavities, occur in Oas Lode Claim No. 1 ore; so that it is believed that Oas Iron Mine ore would easily meet the existing specifications of the Atomic Energy Commission for heavy aggregate. Two samples of Oas Lode Claim No. 1 ore were tested for specific gravity by Curtis & Tempkins, Ltd., as follows:

Sample	Per Cent Iron	Specific Gravity
2M15	67.5%	4.78
2M16	66.0%	4.80