GM 07534-A

REPORT ON THE PROPERTY

Documents complémentaires

Additional Files

Licence

License

Énergie et Ressources naturelles
Québec

Report on the property of
CHESBAR CHIBOUGAMAU MINES LTD.
in the
CHIBOUGAMAU MINING AREA, NORTHWESTERN QUEBEC

By G. H. DUMONT, B.A.Sc., P.Eng.

MINING CLAIMS AND LOCATION

Chesbar Chibougamau Mines Ltd. holds 53 claims of 40 acres each forming one solid block having a total area of 2,120 acres. These claims are situated in unsurveyed territory and cover a distance of three miles in an east-west direction and an average of one mile and a half in a north-south direction. The property is practically cut in two by the east-west township line between Lescure Twp. to the north and Druillettes Twp. to the south. Thirty-four claims are in Lescure Twp. and nineteen in Druillettes Twp.

The Miner's Certificates Numbers together with the corresponding Claims Numbers are as follows:

Lescure Twp.

Cert. 86,249, Claims 1 to 5 incl. L-15639, 40, 41, 42 and 43.	27711
Cert. 86,250, Claims 1 to 5 incl. L-17826, 27, 28, 29 and 30.	721
Cert. 86,252, Claims 1 to 5 incl. L-15649, 50, 51, 52 and 53.	713
Cert. 86,253, Claims 1 to 5 incl. L-15654, 55, 56, 57 and 58.	714
Cert. 86,256, Claims 1 to 3 incl. L-15669, 70 and 71.	717
Cert. 86,257, Claims 1 to 3 incl. L-15674, 75 and 76.	718
Cert. 86,258, Claims 1 to 3 incl. L-15659, 60 and 61.	715
Cert. 86,259, Claims 1 to 5 incl. L-15664, 65, 66, 67 and 68.	716

Druillettes Twp.

Cert. 86,251, Claims 1 to 5 incl. L-15644, 45, 46, 47 and 48.	712
Cert. 86,254, Claims 1 to 5 incl. L-15679, 80, 81, 82 and 83.	719
Cert. 86,255, Claims 1 to 5 incl. L-15684, 85, 86, 87 and 88.	720
Cert. 86,256, Claims 4 and 5 L-15672 and 73.	717
Cert. 86,257, Claims 4 and 5 L-15677 and 78.	718

These claims are being explored and prospected, they are not in production.

ACCESS

A new railway branch is being built by Canadian National Railways from Barraute to Chibougamau to service the new copper mining field now booming. The railway line scheduled to be completed at the beginning of 1957, will pass through Opemiska Copper Mines 21 miles north of the Chesbar Chibougamau property. From Opemiska, there is a good gravel road leading to Chibougamau and to St-Félicien, and from there to Arvida and to Quebec City. Twenty-five miles due east of the Chesbar Chibougamau property, there is Chibougamau Explorers, the latest gold and copper producer in the area. Thirty-five miles to the north-east there is the main Chibougamau camp with Campbell's, etc. So far, the quickest and cheapest way to travel to the property is by float-plane. The distances from the Fecteau Air bases are 35 miles from Chibougamau and 130 miles from Senneterre, main division of the Canadian National transcontinental railway.

TOPOGRAPHY

The area covered by the claims is practically surrounded by three large lakes, namely Windy Lake, Rane Lake and Lac de la Baie. Also seven small lakes varying in size from a few hundred feet up to half a mile have been found while prospecting. Needless to say that water is plentiful. The ground is undulating gently with differences in elevation of not more than 50 to 75 feet. There are a few muskegs but they are of small extent. Rock outcrops can be seen at many places or are covered with a thin layer of overburden only. Spruce, birch, and jack pine are the most important species of trees. They are plentiful and of good size used in mining operations.

GEOLOGY

A general geological reconnaissance made by H. W. Lyall in 1952 for the Quebec Department of Mines is the most up-to-date work on the area covered by the claims. The report was published in 1953 under P.R. No. 285. It is stated that all the consolidated rocks of the area are of Precambrian age. The older group is composed mainly of andesitic and basaltic lavas, with minor quantities of rhyolitic lavas, pyroclastics, diorite and gabbro. These 6 types of rocks have all been found on the Chesbar Chibougamau property.

FOLDING

Lyall states that the schistosity possesses a general east-west trend. The dips are steep to vertical. As far as could be ascertained, the schistosity is everywhere parallel to the tuffaceous banding and to the lava flows. The only divergence readily attributable to an intrusive mass is that which takes place just south of lac Rane where the schistosity and banding conform roughly to the trend of the gabbro contact to the north.

SHEARING

There are two prominent shear directions: one north-easterly, the other easterly. The shear zones range from a few feet in width up to 50 feet. The best exposures of sheared rocks are along the shores of lac Rane and of Windy Lake. Intense movement along the zones has, in many places, produced rocks that are highly chloritic and very slaty. A potential location for mineralization of importance may occur at the junction of the northeasterly-southwesterly trending shears with the east-west shears. A number of mineralized zones were observed during the summer of 1955, some of which carry a high amount of pyrite and pyrrhotite. A few carry also an interesting amount of chalcopyrite.

WORK DONE AND RESULTS

Forty-eight claims were staked during the month of February, 1955 and five more on June 17, 1955 to protect a copper find made a few days before. From May 12 to October 25, 1955, a period of 5 months and a half, a crew of men has been working on the property. The exploration done so far consists of line cutting, magnetometer survey, trenching, rock blasting, surface prospecting and geology, at a total cost of $30,000.00.

Due to the large size of the property, the whole ground is not yet fully covered in detail. However, sufficient work has been done to show the presence of copper mineralization in interesting amount at three places. Pyrrhotite accompanies the chalcopyrite and the whole mineralization can be traced with a magnetometer. The magnetometer survey is far from complete as yet, but what has been done already shows the existence of many magnetic anomalies.

The longest and most interesting anomaly is located between lines 6-E and 32-W with a general direction of N-60°-E. and average width of 50 to 100 feet. To date the indicated length is over 4,500 feet and both ends are still open. In the centre of the anomaly, a copper showing was found between lines 8-W and 10-W, and another near the actual east end between lines 4-E and 6-E. The mineralization consists of pyrite, pyrrhotite and chalcopyrite in acidic tuffs, breccia and fragmental lavas. It can be seen over a width of 40 feet in the middle showing and 10 feet in the east showing, and the values obtained are as follows:

No. 1 15.24% Cu, together with $0.63 gold and $0.45 silver 1" to 2" Highgrade streak in centre of east showing.
No. 2 0.56% Cu, east showing, diesseminated fine chalcopyrite in dark acidic slaty tuffs.
No. 3 1.64% Cu, middle showing, grey acidic fragmental lavas well mineralized with pyrite and chalcopyrite.

No. 4 3.30% Cu, middle showing, rusty rock from surface.
No. 5 1.25% Cu, middle showing, rusty rock from surface.
No. 6 0.22% Cu, middle showing, well mineralized, mostly pyrrhotite.
No. 7 1.05% Cu, east showing, fine chalco in acidic slaty tuffs.
No. 8 1.55% Cu, east showing, channel sample over a width of 2 feet.
No. 9 0.62% Cu, middle showing, channel sample 2.5 feet wide.
No. 10 0.80% Cu, middle showing, channel sample 2 feet wide, three feet north of No. 9.
No. 11 1.72% Cu, middle showing, channel sample over a width of 5 feet at eight feet north of No. 10.

Blasting has been done on both showings and much broken mineralized rock can be seen on the side of the trenches containing two to six per cent copper.

Between lines 48-W and 58-W there is a strong magnetic anomaly in line with the one just described. The survey will be carried out to cover the gap between lines 32-W and 48-W, a distance of 1,500 feet, and if the two anomalies meet together, that will give a total length of 8,000 feet with both ends still open that is to say, with possibilities to continue further to the north-east and the south-west. These possibilities will also be investigated by more magnetometer survey.

Between lines 56-W and 58-W, on the south shore of a small lake, there exists some interesting mineralization. The rocks are dominantly tuffs and agglomerates with some andesites and slaty shales. The mineralization is mainly restricted to the pyroclastics (breccia and agglomerates) which have been highly silicified, and it consists of disseminated to massive pyrite and pyrrhotite with chalcopyrite as a minor association. The mineralization where uncovered is 15 feet wide and carries 0.35% Cu. A piece of well mineralized material from the same location yielded 2.42% Cu. This shows the presence of copper in interesting amounts and the magnetometer survey indicates to date a length of 800 feet with both ends still open.

The magnetometer survey shows also two other parallel magnetic bands of 700-foot intervals south of the anomaly just described, varying in width from 50 to 200 feet. So far, no rock outcrops were seen under these two anomalies.

Sulphide mineralization occurs at a few other places on the property, and was located while the men were cutting lines.

RECOMMENDATIONS AND CONCLUSIONS

In the short period of 6 months, the preliminary exploration on the Windy Lake property, now held by Chesbar Chibougamau Mines Ltd., has produced very encouraging results. These are indications of a copper bearing break more than 8,000 feet long. This alone is enough to warrant a big diamond drilling program. Four other anomalies were found; one of them south of a small lake is known to be caused by pyrrhotite mineralization together with some copper. Both copper breaks are mostly under cover and same applies to the other anomalies.

Sulphide mineralization occurs at a few other places on the property, and was located while the men were cutting lines. The survey, however, is not yet over these places. Most of them are in the southwest portion of the property. No copper values were found there as yet. Assays of the massive pyrite gave 40% Iron and 42% Sulfur, while the massive pyrrhotite gave 41% Iron and 24% Sulfur.

Gabbro and diorite intrusives exist in the nothern portion of the property and in places they come very close to the main copper break. They may have had an influence on the copper deposition. This together with changes of strike that occur in different places along the anomaly are very promising potential locations for better copper disposition. The magnetometer survey should be carried out over the whole property to have a complete picture of the geological structure.

To date a total amount of $30,000.00 has been spent in connection with the property: staking, transportation by air of men, equipment and supplies, travelling by air, line cutting, magnetometer survey, prospecting, trenching, rock cutting equipment and camps construction.

Two camps 20 x 30 newly built and finished with aluminum roofing and siding are ready to receive the diamond drillers and the prospectors.

Diamond drilling in that area owing to the actual lack of road costs $6.00/foot including overhead, engineering, core grabbing, assaying, etc. It is our opinion that a minimum program of 25,000 feet will be necessary to test thoroughly each anomaly of importance, and that the copper showings found so far are encouraging enough to warrant the expenditures.

The Chibougamau mining area is now very active, with two big mines (Opemiska and Campbell) producing copper. The Campbell Chibougamau after a few months of operation shows already an operation profit of $800,000.00 per month. With a mill rate of 2,000 tons per day, it has reached the fifth position among Canada's copper producers. Opemiska after a year of operation has exceeded original forecasts and will show a net profit of over $1,700,000.00.

This mining camp has been neglected for over 20 years, the advent of better communication, railway, highway and electric power, will certainly help to increase its development. The Chesbar Chibougamau property is only 22 miles south of the new railway and could be connected with it by a low cost gravel road.

This property in the booming Chibougamau mining area with its three copper-bearing showings already known and chances for a few more is certainly worthy of of an extensive exploration program. With 25,000 feet of diamond drilling at $6.00/ft. plus some more detailed trenching and geophysical survey a total amount of $175,000.00 can be appropriated to be spent on the property.

It is my opinion that the copper mineralization already found in several sections along a structure over 8,000 feet long together with the other anomalies are favorable indications of the possibility of copper deposits of large dimensions.

Respectfully submitted,
G. H. DUMONT, P. Eng.

CERTIFICATE

I, George H. Dumont, of the Town of Val d'Or, in the Province of Quebec, do hereby certify as follows:

1. I am a Professional Engineer carrying on by practice from Val d'Or, Quebec.

2. I attended the Ecole Polytechnique, University of Montreal, for five years; am a member of the Society of Professional Engineers of Quebec and a member of the American Institute of Mining and Metallurgical Engineers. I have practiced my profession as a Field Engineer and Consulting Engineer for over 20 years.

3. I have no interest either directly or indirectly, nor do I expect to receive any interest either directly or indirectly in the property or securities of Chesbar Chibougamau Mines Ltd., except such fees as I may be paid for services rendered as Consulting Engineer.

4. My report to Chesbar Chibougamau Mines Ltd., dated May 11th, 1956, is based on personal observations on the property and surrounding properties during the period from February 15th to November 1st, 1955.

Dated at Val d'Or, Quebec, this 11th day of May, 1956.

G. H. DUMONT, B.A.Sc., P. Eng.
Member Corp. of Prof. Eng. of Quebec.
Member American Institute of Mining
and Metallurgical Engineers.

Val d'Or, Quebec.
May 11th, 1956.

P.O. Box 398 Phone 4-2163

G. H. DUMONT
Consulting Engineer
VAL D'OR, QUE.

(2)

Report on work done in 1956 on the Windy Lake property of CHESBAR CHIBOUGAMAU MINES LTD.

October 29, 1956.

During the period from June 1st to October 19th, 1956, 12,376 feet of diamond drilling, distributed in 26 holes, were drilled by Bérubé Diamond Drilling Co. on the Windy Lake property. A geological survey was carried out by Messrs. A. Holmes and J. Huddart, Geologists; and the magnetometer survey over the whole property was completed by R. Mainville.

The geological survey shows the following sequence from north to south: a wide dyke of a basic intrusive complex intruding chiefly a large band of pyroclastics which includes slates, tuffs, fragmental lavas and rhyolite. The next wide band is andesite followed by intervening narrow bands of rhyolite, pyroclastics andesite. The general strike is N - 70° - E with a dip nearly vertical or generally very steep towards the south.

The basic complex contacts have about the same general strike, but locally are very irregular. There are also a number of narrow diorite dykes following more or less the attitude of the lava flows. There is a wider basic dyke in the southern part of the property between lines 22-W and 46-W. Two quartz-feldspar porphyry dykes were found; the first one is a long narrow dyke north of the copper showing between lines 2-W and 12-W, and the second is a wider one in an ambayment of the gabbro between lines 24-W and 30-W in the southern portion of the property.

A possible fault, with a general direction of N - 40° - E, is indicated in line with the east shore of lake Rane. Most of the pyroclastics are lavas except the dark slates and some of the tuffs which are of sedimentary origins. The sulphide mineralization is especially strong in the dark slates and in several sections of the fragmental lavas. In the wide rhyolitic bands of the southeast, there is also a scattered and widespread pyrrhotite mineralization.

The magnetometer survey was carried out with a Watts magnetometer having a sensitivity of 37.6 gammas per scale division. Readings were taken at 50-foot intervals along north-south picket lines 200 feet apart. A total of 5,940 stations and 62 miles of picket lines were completed during the 1955 and 1956 summer seasons together with a fair amount of trenching and rock blasting.

The survey shows seven major mineralized bands of striking N - 70° - E traversing intermittently the whole property and several other short ones. Anomalies 1-A, 1-B, 1-C and 1-D constitute the longest mineralized band, 11,000 feet, and it follows the south contact area of the wide basic intrusive complex dyke. Anomaly 1-D contains copper showings Nos. 1 and 2. Anomaly 2-B, 1,500 feet long, is on the north contact of the wide basic dyke and it contains showing No. 3, which is less important than showing No. 2. All the other anomalies indicate mineralized bands more often in the pyroclastics than in the andesite except anomalies 7-A and 7-B which indicates pyrrhotite concentrations within the rhyolitic bands where pyrrhotite is usually disseminated.

Diamond Drilling, "A" core size, was done with a view to explore the downward and lateral extensions of the copper showings and test the other anomalies detected by the magnetometer survey.

Under showing No. 2 in the center of anomaly 1-D, holes Nos. 1, 2, 4, 6, 8, 8-A, 10, 12, 13 and 14 explored the mineralization along a strike length of 600 feet and a vertical depth of 500 feet. The best section is the one directly under the showing where hole 1 cut 0.29% Cu over a core length of 7 feet at a vertical depth of 50 feet, hole 2 cut 0.66% Cu over a core length of 5 feet and 0.60% Cu over a core length of 11 feet at respective vertical depths of 90 and 115 feet, hole 6 cut 5.10% Cu over a core length of 4.5 feet at a vertical depth of 315 feet, and hole 12 cut 0.25% Cu over 6 feet and 0.32% Cu over 4 feet at a vertical depth of 530 feet. The section shows three steeply dipping diorite-gabbro dykes with the copper-bearing zone along or inside the most northerly dyke.

One hundred feet to the east, section holes 13 and 14 did not cut any value of interest, and barren also was hole 4, 250 feet farther east.

One hundred feet west of the first favorable section, section holes 8 and 10 intersected the copper-bearing zone 70 feet south of the most northerly basic dyke. Hole 8 cut 1.05% Cu over a core length of 9 feet at a vertical depth of 190 feet, and hole 10 cut 0.49% Cu over 3 feet at 390 feet. The heavily mineralized band (pyrite and pyrrhotite) accompanying the copper mineralization in acidic tuffs and fragmental lavas in both holes, has a true width of 20 feet.

One hundred feet further west and the last in that direction there is section hole 8-A which cut 0.24% Cu over 2 feet and 0.53% Cu over 1 foot at a vertical depth of 180 feet. The pyrite and pyrrhotite mineralization is very strong from footage 128 to 187, as was the case for the two previous sections.

This drilling under showing No. 2 has indicated two small ore shoots estimated to contain 15,400 tons averaging 1.88% copper. Hole No. 9 across the same anomaly 1-D on line 18-W or 800 feet west of hole 8-A shows scattered fractures filled with pyrrhotite and chalcopyrite north of the gabbro dyke into acidic to intermediate lavas from 210 to 250. Hole No. 11, 400 feet still farther west, has intersected 10 feet of 0.48% Zn in altered, sheared and mineralized acidic lavas. It seems that the 1,200-foot stretch between 8-A and 11 warrants to be explored furthermore. Hole 22, 100 feet west of hole 11 shows pyrrhotite and some sphalerite but no improvement over hole 11. Anomaly 1-D continues non explored toward the west for another 1,200 feet where it might be cut off by a possible fault revealed by the geologists.

Always on anomaly 1-D, but at the eastern end, holes 7, 3 and 5 were drilled respectively on lines 2-W, 4-E and 6-E. Nothing of interest was cut in hole 7. In hole No. 3 under showing No. 1, 15 feet of fine chalco were cut in different sections between footage 494 and 530 averaging 0.20 to 0.53% Cu. The most easterly hole, hole No. 5, has intersected between footage 419 and 452, 6 feet of 0.16% Cu, 2.5 feet of 0.69% Cu and 4 feet of 0.16% Cu. In both holes, Nos. 3 and 5, the mineralization consists of fine chalco disseminated in fragmental lavas, well chloritized, and situated on the south side of the wide most northerly gabbro dyke.

On anomaly 2-B and in the vicinity of showing No. 3, holes 15 and 18 were drilled, and widespread low grade copper mineralization was cut within the well mineralized (pyrite and pyrrhotite) acidic tuffs and fragmental lavas on the north side of a wide diorite dyke. Assays in hole 15 gave 0.27% Cu over 18 feet from footage 282 to 300, and in hole 18, 150 feet west, 6 feet of 0.12% and 15 feet of 0.16% Cu from 100 to 106 and from 110 to 125 within

the diorite, and 13 feet of 0.17% Cu from 137 to 150 into the acid lavas well mineralized with pyrrhotite and pyrite from 137 to 190.

The seven remaining holes Nos. 16, 17, 19, 20, 21, 23 and 24 were drilled on different anomalies. Hole 17 cut anomaly 4-A on line 20-W and wide sections of 25% to 85% sulphides were found. The heavy mineralization is nearly continuous from 174 to 325, a core length of 150 feet. Unfortunately the mineralization consists only of pyrite and pyrrhotite with low traces of copper. A typical 5-foot sample yielded 0.07% Cu, 37.1% Fe and 41.0% sulphur.

Holes 16, 21 and 24 were drilled on anomaly 3-D, which comprises several parallel mineralized dark slates zones within porphyritic andesite. In hole 21, the best of the three, some scattered chalcopyrite was found throughout the mineralized dark slates and also in the porphyritic andesite near the contacts. The average was very low, around 0.09% Cu for three zones totalling 49 feet.

Hole 19, alone on anomaly 1-C, did not intersect anything of interest. It was mostly acidic lavas south of a wide diorite dyke and disseminated pyrite and pyrrhotite from 652 to 693.

Hole 20 and hole 23 were drilled on anomalies 7-B and 7-A respectively indicating the most southerly mineralized band. Hole 20 is near the eastern end, and hole 23 near the western end. Both holes show chiefly intermediate lavas mineralized with scattered pyrrhotite and a few specks of chalcopyrite.

Conclusion and Recommendations

Nearly all the anomalies are underlain by sulphide mineralization (pyrite and pyrrhotite). The copper mineralization encountered so far is in general very sparse except on anomaly 1-D, the most northerly, where a number of interesting copper-bearing sections were obtained. As said before more exploration is warranted on the western part of anomaly 1-D along a strike length of 2,700 feet between hole 8-A and the possible fault indicated on the geological survey plan, where a recurrence of the small copper ore sheets is possible, especially between holes 8-A and 9.

A few anomalies of interest to be explored with at least one hole each are 1-A, 3-B, 5-A, 6-A, 3-C and 4-B. The small anomaly near mile post VIII should also be investigated, because it is near a deep north-south valley between lines 2-E and 4-E connecting Windy Lake with the small lake 900 feet north. The valley may be the surface expression of a fault and the change of rock formation on the geological plan would also suggest that. Finally a few shallow drill holes should be drilled not far east of showing No. 1 on anomaly 1-D to see if the copper mineralization improves within the wide gabbro dyke cutting off the anomaly.

Enough exploration has been done on the property to credit the assessment work requirement for many years. In our opinion the recommended supplementary exploration should improve the value of the property and can be done at the convenience of the company.

Respectfully submitted,

GHD/RT.

G. H. DUMONT, B.A.Sc., P. Eng.

CERTIFICATE

I, GEORGE H. DUMONT, of the Town of Val d'Or, in the Province of Quebec, do hereby certify as follows:

1. I am a Professional Engineer carrying on my practice from Val d'Or, Quebec.

2. I attended the Ecole Polytechnique, University of Montreal, for five years; am a member of the Society of Professional Engineers of Quebec and a member of the American Institute of Mining and Metallurgical Engineers. I have practiced my profession as a Field Engineer and Consulting Engineer for over 20 years.

3. I have no interest either directly or indirectly, nor do I expect to receive any interest either directly or indirectly in the property or securities of CHESBAR CHIBOUGAMAU MINES LTD., except such fees as I may be paid for services rendered as Consulting Engineer.

4. My report on CHESBAR CHIBOUGAMAU MINES LTD., dated October 29th, 1956, is based on personal observations on the property and surrounding properties during the period from February 15th, 1955 to October 29th, 1956. Since the date of my said report, there has been no further work done at the property and the situation respecting the property is as it existed at the date of the said report.

Dated at Val d'Or, this 20th day of June, 1958.

G. H. DUMONT, B.A.Sc., P. Eng.
Member Corpt. of Prof. Eng. of Quebec.
Member of American Institute of Mining and Metallurgical Engineers.

Val d'Or, Quebec.
June 20th, 1958.

G. H. DUMONT

Report on
the Waswanipi Lake Property of
CHESBAR CHIBOUGAMAU MINES LTD.

By

G. H. DUMONT, B.A.Sc., P. Eng.

(3)

January 11th, 1958.

PROPERTY, LOCATION, MEANS OF ACCESS, ETC.

One hundred and ten 40-acre claims, making a total of 4,400 acres, are under the name of Chesbar Chibougamau Mines Ltd. in Bossé and Duplessis Townships, Northwestern Quebec. This group of claims covers an East-West length of 5½ miles and an average width of one mile.

A new rail line, inaugurated in October 1957, built by the Canadian National Railways between Barraute and Chibougamau, a distance of 200 miles, crosses the O'Sullivan River at a point two miles to the South-East of the claims. At that point there is an important railroad station, called Miquelon, with several sidings, which is half way between Barraute and Chibougamau. Also at the same point, the motor road from Senneterre to Bachelor Lake crosses the O'Sullivan River. The O'Sullivan River is an important travelling water route 300 to 400 feet wide flowing North between Pusticamica Lake and Waswanipi Lake.

The Eastern half of the property has a gently rolling topography, slightly higher than the flat western portion. Good stands of timber, chiefly spruce, are numerous and the trees, spruce, balsam and birch, are of a size large enough for ordinary mining and construction purposes.

Water is in ample reserve in Waswanipi Lake and the O'Sullivan River, at the eastern end of the property, to furnish any large size concentrator.

GENERAL GEOLOGY

The property is within a large granitic batholith and seems to be underlain chiefly by granite except for big remnants of iron formations which have been positioned in irregular patterns by the intrusive action of the large batholith. The grade of the iron formation and the grain size seems to have been improved by the heat and pressure of the granite. The iron mineral consists of magnetic and therefore the positions of these iron deposits are located and outlined very easily by magnetometer surveys.

WORK DONE

During the months of October and November 1957 detailed ground magnetometer surveys, trenching and sampling, have been done under the supervision of J. R. Booth, Consulting Geologist, President of Chesbar Chibougamau Mines Ltd., and G. H. Dumont, Consulting Mining Engineer, to test a magnetic attraction noted by a government geologist. This work covers only a small area in the central portion of the large property. Six concentration tests have been made on 21 channel samples by H. U. Ross, Consulting Metallurgical Engineer.

Accompanying this report are the following documents:

5) Copies of assay reports;

6) Copies of concentration tests;

7) Copy of report on concentration tests by H. U. Ross.

RESULTS OF THE SURVEYS

The preliminary magnetometer survey carried out with Northeast-Southwest picket lines cut at 500 feet intervals along a Northwest-Southeast strike length of 6,500 feet shows that the iron bearing formation forms an arc varying in strike from North-South to East-West with more than 7,000 feet of length on the Chesbar property. The formation goes on farther West and farther South than the boundaries of the property. The anomaly varies in widths from 150 feet to 700 feet.

A detailed survey over a length of 4,000 feet was made along the central portion of the anomaly with lines at 100 feet intervals and readings every 50 feet along the lines.

According to the sampling of the outcrops that can be seen on surface, it looks that the area outlined by the 15,000 gammas contour and higher contours is underlain by the 35% iron material. Assuming a vertical depth of 300 feet, the central portion of the anomaly from one boundary to the other would indicate a possibility of 28,000,000 tons. However, in the area covered between the 10,000 and the 15,000 gammas contours some 35% iron has been found and some lower grade iron has also been found. Assuming open pit depth of 300 feet under this area, the estimated tonnage would be 55,000,000 long tons of iron ore averaging very roughly more or less 30% Fe.

RESULTS OF THE SURFACE SAMPLING

Twenty three channel surface samples taken at different places along a 2,000 foot length of strike gave the following results, going from East to West between lines 18 and 38:

29.7%	Fe	over	a	length	sampled	of	36	feet
33.4%	Fe	"	"	"	"	"	125	"
31.7%	Fe	"	"	"	"	"	125	"
38.3%	Fe	"	"	"	"	"	55	"
38.5%	Fe	"	"	"	"	"	56	"
35.3%	Fe	"	"	"	"	"	79	"

In no case, on account of the overburden, the full width of the iron deposit as shown by the geophysical survey could be sampled. According to this preliminary sampling we have a weighted average of 34.2% iron.

RESULTS OF THE CONCENTRATION TESTS

Six concentration tests results on composite samples of 21 channel samples cut on Chesbar's Waswanipi Lake iron property show that an iron concentrate of high quality can be obtained with low silica and no impurities worth mentioning and a good recovery of the iron at a relatively not too fine a grind. The concentration ratio which is one ton of concentrate for two tons of ore is very good especially with the low cost magnetic method employed.

The following is a resume of the results:

Test No.	Heads % Fe	Magnetic % Fe	Concentrate % Fe	Silica	Recovery %	Ratio of Concentration
1	33.46	32.00	69.10	2.14	91.3	2.22
2	30.42	28.87	58.20	13.76	95.0	2.02
3	31.40	29.60	67.18	4.40	94.6	2.26
4	38.02	35.32	69.00	1.56	93.0	1.95
5	38.00	36.43	69.40	1.36	95.9	1.90
6	34.83	32.66	69.20	1.66	93.8	2.12

The No. 2 test was made at a very coarse grind and the others at minus 200 mesh. The average of the five tests in which the ore was ground to 200 mesh gives the following results: Heads 35.14% Fe, Magnetic Fe 33.22%, Concentrate 68.78% Fe, Silica 2.22%, Recovery 93.7% and Ratio of Concentration 2.09. The impurities are very low as shown by the assay results of a composite of concentrates from tests 3 to 6 inclusive which yielded:

Sulphur	0.06%
Phosphorus	0.01%
Arsenic less than	0.005%
Titanium dioxide	0.02%

CONCLUSION AND RECOMMENDATIONS:

The Chesbar's iron deposit has the following characteristics:

1) Ore deposit averaging 30 - 40% iron;

2) Ore readily amenable to treatment by low cost magnetic methods;

3) Good recovery, over 93%, at a reasonable grind of minus 200 mesh;

4) Concentrate of 69% Fe, low in silica, about 2%, and free of any detrimental impurities;

5) Widths of 150 to 500 feet;

6) Steep dip of 50 to 70°;

7) Length of more than 7,000 feet;

8) Tonnage possibilities to produce more than 500,000 tons a year of high grade pellets for a period of 20 years;

9) Near existing railroad, road, water and skilled labour;

10) Shallow overburden and advantageous topography;

11) Possibilities for other deposits.

The indications of the magnetometer survey and the surface results are sufficient to warrant a detailed diamond drilling program to establish the tonnage possibilities to a vertical depth of 300 feet. According to the aeromagnetic survey other anomalies will be found on the large Chesbar property and detailed magnetometer survey should be carried out over the whole holdings while drilling is being done on the main anomaly.

The magnetometer survey, the detailed drilling along sections at 300 foot intervals on the main anomaly, and the exploratory drilling on other anomalies are estimated at $90,000.00 and it is our considered opinion that this work is fully warranted and should be undertaken in the near future.

Respectfully submitted,

G. H. DUMONT, B.A.Sc., P. Eng.

GHD/rt
Montreal, Quebec,
January 11th, 1958.

CERTIFICATE

I, GEORGE H. DUMONT, of the Town of Val d'Or, in the Province of Quebec, do hereby certify as follows:

1. I am a Professional Engineer carrying on my practice from Val d'Or, Quebec.

2. I attended the Ecole Polytechnique, University of Montreal, for five years; am a member of the Society of Professional Engineers of Quebec and a member of the American Institute of Mining and Metallurgical Engineers. I have practiced my profession as a Field Engineer and Consulting Engineer for over 20 years.

3. I have no interest either directly or indirectly, nor do I expect to receive any interest either directly or indirectly in the property or securities of CHESBAR CHIBOUGAMAU MINES LTD., except such fees as I may be paid for services rendered as Consulting Engineer.

4. My report to CHESBAR CHIBOUGAMAU MINES LTD., dated January 11th, 1958, is based on personal observations on the property and surrounding properties during the period from October 1st 1957 to December 1st 1957.

Dated at Montreal, Quebec, this 11th day of January, 1958.

G. H. DUMONT, B.A.Sc., P. Eng.
Member Corp. of Prof. Eng. of Quebec.
Member of American Institute of Mining
and Metallurgical Engineers.

GHD/rt
Montreal, Quebec.
January 11th, 1958.

Telephone HUdson 2209

20 Blyth Hill Road, Toronto 12, Canada

H E N R Y U. R O S S
M.Sc., P. Eng.
METALLURGICAL ENGINEER

(4)

Report on
Concentration Tests on Iron Ore Samples
for
CHESBAR CHIBOUGAMAU MINES LTD.

INTRODUCTION

This report has been prepared by H. U. Ross, Metallurgical Engineer for the Chesbar Mines Limited, both of Toronto, Ontario. The purpose of the report is to present the results of six tests made on twenty-one iron ore samples submitted for testing.

The object of the tests was to determine the concentratability of the ore. From the tests, the following information was determined:

(1) The Grade of the Ore
(2) The Grade of the Concentrates
(3) The Percentage Iron Recovery
(4) The Ratio of Concentration
(5) The Magnetic Iron Assay, and
(6) The approximate fineness to which the ore must be ground to liberate the iron minerals from the gangue.

In all, twenty-three samples were received but the tests were made only on the first twenty-one. For the tests, the samples were combined into five composite samples as follows:

Composite Sample No,	Sample Nos.
1	1, 2, 3, 4, 5, 6
2	7, 8, 9, 10, 11, 12, 13
3	14, 15
4	16, 17, 18
5	19, 20, 21

RESULTS OF TESTS

The results of the tests are shown in detail on the attached laboratory sheets. There is one sheet for each test performed.

Tests No. 1 and 2 were made on the composite samples 1 to 6. In test No. 1, the ore was ground to 200 mesh. In test No. 2, the ore was ground to 65 mesh. The second test was made to show the effect of coarse grinding. The remaining four tests were made on the other four composite samples after they had been ground to 200 mesh.

The tests in which the ore was ground to 200 mesh show that the ore contains between 31.4 and 38.0% iron. The concentrates contain from 67.2 to 69.4% iron and less than 4.4% silica. The percentage iron recovery varies

from 91.3% to 95.9% and the ratio of concentration from 1.905 to 2.262. The magnetic iron assay of the ore is between 29.7% and 36.4%. In test No. 1, it was shown that the concentrates contain only 0.02% of phosphorus and a trace of titanium dioxide.

In test No. 2, in which the ore was ground to 65 mesh only, the iron in the concentrates was 58.2% and the silicon 13.7%. The silica is too high to make the concentrates acceptable to the iron and steel industry. Thus grinding finer than 65 mesh is necessary in order to make a satisfactory separation between the iron minerals and the gangue. In practice the degree of fineness to which the ore must be ground will be between 65 mesh and 200 mesh, probably around 150 mesh.

PREPARATION OF SAMPLES

Samples No. 1 to 6 were received for testing on October 15th, 1957. They had already been finely crushed to obtain a sample for head assay and so it was difficult to examine the ore to determine its type. However, visual examination of a few of the larger pieces showed that fine grinding was indicated. The composite sample was made by splitting each sample the same number of times and combining the representative portions so obtained.

Samples No. 7 to 23 were received on November 1st. These too had been finely crushed and a sample for head assay removed. These were combined in composites as instructed in the same manner as the first composite. Samples No. 22 and 23 were not tested.

The head assays of each individual sample were made by X-ray Assay Laboratories Limited and are shown below:

Sample No.	Percentage Iron	Sample No.	Percentage Iron
1	36.4	13	30.2
2	29.9	14	35.8
3	35.6	15	42.2
4	34.5	16	39.3
5	39.7	17	35.0
6	29.0	18	41.8
7	37.4	19	34.0
8	34.4	20	37.8
9	34.2	21	33.6
10	28.2	22	34.1
11	39.0	23	26.1
12	34.2		

A representative portion of each complete sample was ground to 200 mesh in a Braun pulverizer. To prevent overgrinding, the minus 200-mesh fraction was first removed. The oversize was then passed through the pulverizer. The ground ore was again screened and the oversize again pulverized. This process was repeated until 95 per cent or more of the sample passed through the screen. For Test No. 2 the same procedure was followed except that a 65-mesh screen was used for screening.

From the ground ore representative portions were cut out for sieve test, Davis Tube test and head assay.

DESCRIPTION OF TESTS

For the sieve test, a set of Tyler standard testing sieves was used. The sample was screened for twenty minutes on the Tyler Ro-Tap machine. The results of these tests are shown on the attached Sieve Tests sheet.

All of the Davis Tube magnetic separations were made in exactly the same manner. A 20-gram sample of ore was placed in the tube between the electromagnets and washed for ten minutes. The current through the magnet coils was maintained at 1.5 amperes. Wash water was supplied at the rate of 200 millilitres per minute. The tailings were collected in a container. The concentrates were retained in the tube.

The concentrates and tailings were separately filtered, dried and weighed. They were then sent out along with the head samples for assays. All assays were made by the Technical Services Laboratories. The concentrates were assayed for Iron and Silica, the tailings and heads for Iron only. In test No. 1 the concentrates were also assayed for Phosphorus and Titanium Dioxide.

On receiving the results of the assays the percentage iron recovery, ratio of concentration, and the magnetic iron assay were calculated.

Respectfully submitted,

29th November 1957. H. U. ROSS, Metallurgical Engineer

SIEVE TESTS MADE WITH TYLER STANDARD SCREEN SCALE SIEVES

CHESBAR MINES LIMITED

Suite 503, 15 King Street East, Toronto 1, Ontario

November 9th, 1957

MATERIAL — IRON ORE

SCREEN SCALE RATIO $\sqrt{2}$ or 1.414				(A) Test No. 1 TIME: 20 MINUTES		(B) Test No. 2 TIME: 20 MINUTES		(C) Test No. 3 TIME: 20 MINUTES		(D) Test No. 4 TIME: 20 MINUTES		(E) Test No. 5 TIME: 20 MINUTES		(F) Test No. 6 TIME: 20 MINUTES	
OPENINGS Inches	Milli-meters	Mesh	Diameter Wire Inches	% Between Sieves	Cum. % (Total % on Each Sieves)	% Between Sieves	Cum. % (Total % on Each Sieves)	% Between Sieves	Cum. % (Total % on Each Sieves)	% Between Sieves	Cum. % (Total % on Each Sieves)	% Between Sieves	on Each Sieves) Cum. % (Total %	% Between Sieves	Cum. % (Total % on Each Sieves)
.0002	.208	65	.0072			Trace									
.0058	.147	100	.0042			14.0	14.0	0.6	0.6	0.5	0.5	0.1	0.1	0.5	0.5
.0041	.104	150	.0026	0.2	0.2	14.3	28.3	1.9	2.5	1.9	2.4	.2	.3	1.8	2.3
.0029	.074	200	.0021	4.5	4.7	15.4	43.7	3.5	6.0	3.8	6.2	.2	.5	3.3	5.6
		325		50.8	55.5	28.8	72.5	44.6	50.6	39.9	46.1	42.6	43.1	51.8	57.4
	.000	Par		44.5	100.0	27.5	100.0	49.4	100.0	53.9	100.0	56.9	100.0	42.6	100.0
			Totals	100.0		100.0		100.0		100.0		100.0		100.0	

H. U. Ross, P. Eng., Metallurgical Engineer - 20 Blyth Hill Road, Toronto 12, Canada

LABORATORY SHEET

CHESBAR MINES LIMITED

Suite 503, 15 King Street East, Toronto 1, Ontario

October 19, 1957 - Sample No. 1 - 6; Test No. 1

DAVIS TUBE MAGNETIC SEPARATION

Ore ground to 200 mesh and concentrated in Davis Tube

PRODUCT	WEIGHT	ASSAY	ASSAY — %				UNITS (Wt. % x Assay)	DISTRIBUTION %
	%	No.	Iron	SiO_2	P	TiO_2	Iron	Iron
Concentrates	45.0	3477	69.10	2.14	0.018	Trace	3199.50	91.3
Tailings	55.0	3478	3.60				198.00	8.7
Calculated Heads			33.98*				3397.50	100.0
Assay Heads	100.0	3479	33.40					

Remarks: Ratio of Concentration—2.222; Magnetic Iron Assay—32.00%*. * Indicates a calculated assay.

LABORATORY SHEET

9th November 1957 - Sample No. 1 - 6, Test No. 2

DAVIS TUBE MAGNETIC SEPARATION

Ore ground to 65 mesh and concentrated in Davis Tube

PRODUCT	WEIGHT	ASSAY	ASSAY — %				UNITS (Wt. % x Assay)	DISTRIBUTION %
	%	No.	Iron	SiO_2	P	TiO_2	Iron	Iron
Concentrates	49.6	3763	58.20	13.76			2886.72	95.0
Tailings	50.4	3764	3.04				153.22	5.0
Calculated Head			30.40*				3039.94	100.0
Assay Heads	100.0	3765	30.42					

Remarks: Ratio of Concentration—2.016%; Magnetic Iron Assay—28.87%*. *Indicates a calculated assay.

LABORATORY SHEET

9th November 1957 - Sample No. 7 - 13, Test No. 1

DAVIS TUBE MAGNETIC SEPARATION

Ore ground to 200 mesh and concentrated in Davis Tube

PRODUCT	WEIGHT	ASSAY	ASSAY — %				UNITS (Wt. % x Assay)	DISTRIBUTION %
	%	No.	Iron	SiO_2	P	TiO_2	Iron	Iron
Concentrates	44.2	3769	67.18	4.40			2969.36	94.6
Tailings	55.8	3770	3.01				167.96	5.4
Calculated Heads			31.37*				3137.32	100.0
Assay Heads	100.0	3771	31.40					

Remarks: Ratio of Concentration—2.262; Magnetic Iron Assay—29.69%*. *Indicates a calculated assay.

LABORATORY SHEET

November 9th, 1957 - Sample No. 14 - 15, Test No. 4

DAVIS TUBE MAGNETIC SEPARATION

Ore ground to 200 mesh and concentrated in Davis Tube

PRODUCT	WEIGHT	ASSAY	ASSAY — %				UNITS (Wt. % x Assay)	DISTRIBUTION %
	%	No.	Iron	SiO_2	P	TiO_2	Iron	Iron
Concentrates	52.5	3761	69.40	1.36			3643.50	95.9
Tailings	48.8	3758	5.45				265.96	7.0
Calculated Head			37.99*				3798.76	100.0
Assay Heads	100.0	3759	38.02					

Remarks: Ratio of Concentration—1.953; Magnetic Iron Assay—35.32%*. * Indicates a calculated assay.

LABORATORY SHEET

November 9th, 1957 - Sample No. 16 - 18, Test No. 5

DAVIS TUBE MAGNETIC SEPARATION

Ore ground to 200 mesh and concentrated in Davis Tube

PRODUCT	WEIGHT %	ASSAY No.	ASSAY — % Iron	SiO_2	P	TiO_2	UNITS (Wt. % x Assay) Iron	DISTRIBUTION % Iron
Concentrates	52.5	37.61	69.40				3643.50	95.9
Tailings	47.5	3760	3.26				154.85	4.1
Calculated Heads			37.98*				3798.35	100.0
Assay Heads	100.0	3762	38.00					

Remarks: Ratio of Concentration—1.905; Magnetic Iron Assay—36.43%*. * Indicates a calculated assay.

LABORATORY SHEET

9th November, 1957 - Sample No. 19 - 21, Test No. 6

DAVIS TUBE MAGNETIC SEPARATION

Ore ground to 200 mesh and concentrated in Davis Tube

PRODUCT	WEIGHT %	ASSAY No.	ASSAY — % Iron	SiO_2	P	TiO_2	UNITS (Wt. % x Assay) Iron	DISTRIBUTION % Iron
Concentrates	47.2	3766	69.20	1.66			3266.24	93.8
Tailings	52.8	3767	4.10				216.48	6.2
Calculated Heads			34.83*				3482.72	100.0
Assay Heads	100.0	3768	34.83					

Remarks: Ratio of Concentration—2.119; Magnetic Iron Assay—32.66%*. * Indicates a calculated assay.

X-RAY ASSAY LABORATORIES LIMITED

28 Eglinton Avenue West - Toronto, Ontario

ASSAY CERTIFICATE

Report No. 7250 - Received Oct. 15/57

Sample No.	% Fe
1	36.4
2	29.9
3	35.6
4	34.5
5	39.7
6	29.0

ASSAY CERTIFICATE

Report No. 7278 - Received Oct. 28/57

Sample No.	% Fe
7	37.4
8	24.4
9	34.2
10	28.2
11	39.0
12	34.2
13	30.2
14	35.8
15	42.2
16	39.3
17	35.0
18	41.8
19	34.0
20	37.8
21	33.6
22	34.1
23	26.1

TECHNICAL SERVICE LABORATORIES

22 Harbord Street - Toronto 5, Ontario

ANALYTICAL REPORT

Sample(s) From

CHESBAR MINES LIMITED

Suite 503, 15 King Street East, Toronto 1, Ontario

Samples of COMPOSITE (Concentrates from Tests No. 3, 4, 5 and 6 Equal Weights)

Report No. C-71202-1 - 2nd December, 1957

Sulphur (S)	.06%
Phosphorus (P)	.01%
Arsenic (As)	«.005%
Titanium (TiO_2)	.02%

« — less than