GEOTECHNICAL REPORT
GEOLOGICAL AND GEOPHYSICAL SURVEYS
GODFREY TOWNSHIP PROPERTY
PORCUPINE MINING DIVISION

BY

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February 10th, 1993
Lively, Ontario
INTRODUCTION

The Godfrey Township property consists of eight contiguous, unpatented claims situated about 13 km (8 miles) northwest of the city of Timmins, Ontario (Figure 1). The property is located in north-central Godfrey Township, in the Porcupine Mining Division, District of Cochrane (Figure 2). The following claims were recorded on February 28th, 1991: P1176409 to P1176412 inclusive, P1176544 and P1176545. The following two claims were recorded on March 11th, 1991: P1176662 and P1176663. The author, Roberta Bald, of 189 Margaret Avenue, Lively, Ontario, is the holder of the mining claims described in this report.

A metric grid was cut between June 8th and September 20th, 1991 on the property. The claims were then geologically mapped and 49 samples were taken. The samples were analysed for gold, copper and zinc. Two geophysical surveys were performed: a magnetometer survey and a Horizontal Loop EM survey.
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LOCATION, ACCESS AND TOPOGRAPHY

The Godfrey Township claim group is located about 13 km northwest of the city of Timmins, Ontario (Figure 1). The property is located in north central Godfrey Township, in the Porcupine Mining Division, District of Cochrane (Figure 2). The Kamiscotia highway, Highway 576, cuts across the property (Figure 3). Twenty-three Mile Creek runs along the east boundary of the claim group.

The claims are located in Lot 6, Concession IV and V of Godfrey Township and are numbered as follows:

- P1176409 SW 1/4, N 1/2, Conc V, Lot 6
- P1176410 SE 1/4, N 1/2, Conc V, Lot 6
- P1176411 NW 1/4, S 1/2, Conc V, Lot 6
- P1176412 NE 1/4, S 1/2, Conc V, Lot 6
- P1176662 SW 1/4, S 1/2, Conc V, Lot 6
- P1176663 SE 1/4, S 1/2, Conc V, Lot 6
- P1176544 NW 1/4, N 1/2, Conc IV, Lot 6
- P1176545 NE 1/4, N 1/2, Conc IV, Lot 6

The property can be found on NTS map sheet 42 A/12. The center of the claim group is located approximately at 48°31' latitude and 81°29' longitude.

The claims are readily accessible by the Kamiscotia highway which heads northwest from Highway 101 about 7.5 km west of the center of Timmins. The baseline is a cut out lot line and the eastern boundary of the claim group has been cut by other claim holders north of the highway. During the course of this exploration
program, a drill road was pushed northward along the eastern boundary of the claim group to about the middle of Concession V, where it veers off in a northeasterly direction. The two northernmost claims were scheduled to be logged in the summer of 1992, but the author has not verified this in the field.

A high area of outcrop occurs just north of the highway, covered by claims P1176411, P1176412 and P1176663. The southern portion of the property is underlain by a cedar and spruce swamp, along the old power line. Near the east boundary of the claim group, the topography is low and swampy along Twentythree Mile Creek. The rest of the claim group is covered by mature poplar and birch.

REGIONAL GEOLOGY

The Timmins area is situated in the Abitibi Greenstone Belt of the Superior Province of the Canadian Shield (Ginn et. al., 1964; Pyke et. al., 1973). Many of the gold mining camps in Canada, including Timmins, Kirkland Lake-Larder Lake, Rouyn-Noranda and Val D’Or are situated in the Abitibi Greenstone Belt. Since gold was first discovered in the Timmins area in 1909, over 60 million ounces of gold have been recovered from over 37 mines, three of which are still in operation. This ranks Timmins as the largest gold mining camp in North America.

Timmins is also the location of Kidd Creek Mine, one of the largest base metal mines in Canada, producing zinc, copper and silver. Other smaller base metal mines have been in production in
the Timmins area including two in Godfrey Township. The Genex Mine is located about 4 km southwest of the claim group and produced 240 tons of copper concentrate between 21.45% and 27.25%. The Canadian Jamieson Mine, about 3.2 km northwest of the claim group, produced 816,173 tons averaging 2.44% copper and 4.22% zinc from April, 1966 to February, 1971 (Middleton, 1974; Northern Miner, 1966).

Most of the bedrock in the Timmins area is of Archean age. The metavolcanic rocks consist of two groups, the Deloro Group and the younger Tisdale Group. The older Deloro Group is for the most part a calc-alkaline sequence, consisting of andesite and basalt flows overlain by dacitic flows and dacitic to rhyolitic pyroclastic rocks. Iron formation commonly occurs at or near the top of the group. The Shaw Dome is the most extensive exposure of this group. A major change in volcanism occurred between the Deloro and Tisdale Groups. The base of the overlying Tisdale Group consists largely of ultramafic metavolcanic rocks and basaltic komatiites. A sequence of tholeiitic basalts overlies the basal ultramafic rocks and is overlain by calc-alkaline dacitic volcaniclastic rocks.

Metasedimentary rocks which are in part, time equivalent to the upper part of the Deloro Group and the entire Tisdale Group, consist of a turbidite sequence and a thin overlying fluviatile sequence and are called the Porcupine Group. Large ultramafic intrusions were emplaced almost entirely within the Deloro Group. Small bodies of quartz feldspar porphyry intrude the metavolcanic rocks and may in part be extrusive rhyolitic domes. Various small to large granitoid intrusions were emplaced in the metavolcanic-
metasedimentary sequence. Three ages of diabase dikes cut the older rocks in the area and generally trend north and east-northeast.

The Porcupine-Destor Fault Zone is a major structural break which trends northeast across the Timmins area. The fault dips vertically to steeply north. Two periods of folding have deformed the rocks north of the Fault Zone, whereas south of the fault, the main structural feature is the Shaw Dome, the axis of which trends roughly east-west. The Archean rocks in the area have undergone regional metamorphism to the lower to middle greenschist facies.

PREVIOUS WORK

Various provincial government geoscientists have done geological and geophysical studies in Godfrey Township: Burrows, 1911; Finley, 1925; Hogg, 1954; Middleton, 1969, 1971 and 1974; Middleton et. al., 1970; Pyke et. al., 1971; MacRae et. al., 1981.

Much mineral exploration has been done in Godfrey Township. The area was first prospected for gold in the 1900’s, mainly in quartz veins in the quartz porphyry and microdiorite intrusions. From the 1920’s sporadically to the present, the area has also been the target of base metal exploration with some success being achieved in the late 1960’s to early 1970’s by the Genex and Canadian Jamieson Mines Limited mines.

Many reports on exploration activities in the township have been filed for assessment and are available at the Timmins assessment office. Work on the present claim group was first done in the mid-1950’s by Harry Leblanc (T-507). Blasting of trenches
and pits revealed quartz veins and stringers "sparingly mineralized with pyrite and chalcopyrite" in conglomerate (Hogg, 1954). A 503' diamond drill hole cut rhyolite with sparse pyrite. A drill hole casing was found on claim P1176663, just south of the outcrop area on Line 5 South, which gave the highest zinc assays from an old blasted out pit. The drill hole appears to have been drilled to intersect the zone that was sampled in the present survey. A drill hole shown on O.G.S. Preliminary Map P.2075, Timmins Data Series, Godfrey Township, shows a drill hole in roughly the same location as found in the field. The map notes the presence of galena, pyrrhotite, pyrite and sphalerite in felsic metavolcanics (3a: unsubdivided; 3b: ash, lapilli, tuff). It was probably drilled by Hollinger Mines Ltd. (T-1460). It is unknown whether the core is available for sampling and assaying at the drill core library in Timmins.

An airborne Magnetometer and EM survey, covering a large area, flew over the northern portion of the present claim group in 1963 (T-843). No EM conductors were located on the present claim group. Maps of the magnetometer survey were unavailable in the file.

Another, smaller airborne Mag and EM survey was done in 1964 by Mespi Mines Ltd. The magnetometer survey vaguely traced the northerly trending diabase dike which crops out on the present claim group. A wide north to north-northeast trending EM conductor was outlined across the present property.

Cu-Kam Porcupine Mines Ltd. held a large block of ground in the mid-1960's, including the present claim group (T-963).
Geological mapping was done as well as ground magnetometer, Horizontal Loop EM and Induced Polarization surveys. Although the Horizontal Loop EM survey was hampered by "deep conductive overburden, noisy conductive shears and an extremely noisy hydropower line along the road", two parallel, northerly-trending conductors of moderate to poor conductivity were picked up. These conductors were tested by diamond drill holes north of the present claims and revealed fine-grained siliceous graphitic sediments, probably causing the EM conductors. Six other drill holes were drilled and telescoped core samples from this drilling is available at the core library in Timmins. The magnetometer survey traced the diabase dikes and a northerly-trending, magnetically low area probably corresponding to sediments. The I.P. survey outlined a strong, broad anomaly running north-south across the present claims. It was tested by a drill hole just north of the present claim group. The hole intersected sulphide bearing conglomeratic sediments.

Recently, new work has been done on claims adjacent to the property. In 1991 and 1992, Falconbridge Exploration cut lines, and did magnetometer and EM (Horizontal Loop and VLF-EM) surveys over an extensive claim block, essentially surrounding the present claim group (T-3467). Generally, the magnetometer surveys traced the diabase dikes. A few bedrock HLEM conductors were located to the east of the present claim group and it was recommended that these conductors be tested by drilling. Although not in the assessment files, the author is aware that some drilling was done in this area
and gold values were obtained (Northern Miner, 1992, Appendix).

Another report was filed in 1991 for claims contiguous to the southwest corner of the present claim group (T-3518). The report by Max Juby outlined the program of line cutting, magnetometer and VLF-EM surveys that was done. Some EM conductors were located in the program.

LINECUTTING

Under the supervision of the author, a metric grid was cut between June 8th and September 20th, 1991 by Paul Provencher, South Porcupine, Ontario and helpers. A north-south baseline was cut along the old cut out lot line between Lot 6 and Lot 5. After the baseline was put in but before the lines were cut, a baseline was put in by Falconbridge Exploration, the holders of the claims to the west and east of this property. Sixteen east-west lines were cut 100 meters apart and picketed every 20 meters. A total of 14.32 km of line were cut on the property.

GEOLOGICAL SURVEY

The claims were mapped at a scale of 1:2,000 between June 28th and November 21st, 1991. All the lines were walked looking for outcrop and noting tree types, topography and overburden features. Outcrop on the property is confined to three claims: the eastern portion of P1176411, the western and south-central portions of P1176412 and the northwestern corner of P1176663 (Map 1, back pocket). The outcrops were mapped by pace and compass method. No
outcrop was found south of the highway and none was found on the two northernmost claims.

The claim group is mainly underlain by a felsic fragmental metavolcanic unit (Map 1, back pocket), variously mapped by O.G.S. geologists as a conglomerate (Hogg, 1954) or tuff-breccia-waterlain volcanic breccia-conglomerate and graphitic tuffs and agglomerate (Middleton, 1974). A possibly bifurcating, north-northeast-trending diabase dike, about 30 meters wide, cuts this unit. Table 1 lists the rock types found on the property.

<table>
<thead>
<tr>
<th>TABLE 1: Rock Types</th>
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<tbody>
<tr>
<td>1- <strong>Felsic Fragmental Metavolcanic Rocks</strong>: fragmental unit with 30 to 50% matrix and at least two types of fragments: a) white to light grey rhyolite with quartz phenocrysts; and b) dark grey to black argillite fragments, possibly graphitic</td>
</tr>
<tr>
<td>2- <strong>Diabase dikes</strong>: black, magnetic, medium- to coarse-grained, massive; chilled against Unit 1.</td>
</tr>
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The felsic fragmental metavolcanic unit is a foliated unit with about 30 to 50% medium-grained, pinkish-buff coloured, rusty, tuffaceous matrix containing some white weathering feldspar crystals. Two kinds of fragments were noted: light grey to white rhyolite fragments with small, clear quartz crystals; and dark grey or black argilite fragments, locally possibly graphitic, generally
smaller than the rhyolite fragments. The felsic fragments consist of large (up to 20 cm diameter), white weathering, angular to subangular rhyolite or quartz feldspar porphyry. These fragments make up from 15% to 30% of the rock. The graphitic argillite fragments are dark grey, soft, fine-grained, angular to subangular, equant to very elongated parallel to the local foliation, which trends 120° to 150° AZ. These fragments are locally finely laminated and make up about 5% of the rock. Ubiquitous in the unit are weathered out spherical to elliptical areas less than 0.25 cm long which may possibly represent pumice fragments. It was noticed that in general, the fragments seem to be larger near the trenches on L5S, where some grab samples assayed up to 3400 ppm Zn, possibly indicating this area may be a volcanic vent. Further detailed mapping and possibly mechanical stripping is needed to confirm this speculation.

A possible shear zone occurs at L3S, 6+40mE.

The diabase dikes are dark brown on weathered surface, black on fresh, magnetic, medium- to coarse-grained. They are chilled against the fragmental unit.

49 samples were collected and analysed for gold, zinc and copper (Map 1, back pocket). The sample descriptions and locations, and the assay certificates are found in the Appendix. Several of the old trenches and pits were examined and sampled. Most are associated with easterly-trending quartz veins or rusty, pyrite bearing easterly-trending possible shear zones in the fragmental unit. In some cases, the presence of pyrite-rich fragments was
noted. Most trenches contain about 3% to 4% disseminated pyrite or pyrrhotite, but the southernmost pit contains up to 10% sulphides, mainly as pyrite but trace amounts of dark brown sphalerite were also seen.

The metavolcanic rocks are locally cut by quartz veins and gashes. The quartz veins are generally translucent and locally vuggy. They are generally iron stained, but only rarely were any sulphides seen in the quartz. They trend from 020° to 090° AZ. Of the 49 samples collected for analysis, 16 of them were quartz veins and another 10 contained some quartz vein material.

MAGNETOMETER SURVEY

Under supervision of the author, a magnetometer survey was performed on September 23rd and 24th, 1991, by Wayne Pearson, Timmins, Ontario, using a Scintrex MP-2 proton precession magnetometer. This instrument measures total magnetic field and is sensitive to 1 gamma. Specification sheets are in the Appendix.

A base station was established at BL0, L1N. This base station was read before starting the readings of the day and was read again before going home. The baseline was tied in by taking a reading at the base station, then reading the 20 meter baseline pickets to BL0, L2N then reading the base station again and then reading BL0, L2N again, and so on for the entire baseline. Once this was done, the readings taken on the baseline could be checked for drift. It was found that the readings were always within 10 gammas of the tie-ins and thus no corrections were made to the data. Readings
were taken at every picket along the baseline and all sixteen
lines. Readings were taken halfway between the pickets when an
anomaly was being approached. A total of 815 readings were taken on
the grid, over 14.24 km of line.

The results were plotted and the data contoured (Map 2, back
pocket). Six features, from A to F on the map, are described as
follows:

A: A north-northwesterly-trending high, located along the baseline
near L3N and trending off the property, could possibly be a
diabase dike.

B: A north-northwesterly-trending high, located on L4N and L3N, at
about 2+00mE, trending northward off the property, could also
be a diabase dike.

C: A wide north-south low, from L4N to L7S, between 5+00mE and
6+00mE, possibly indicating a magnetically low rock formation,
such as felsic metavolcanic rocks. This low feature covers
most of the exposed felsic metavolcanic outcrops seen on the
property. This could indicate that the rest of the property is
underlain by more mafic, and thus more magnetic, rocks.

D: A long, narrow, northwesterly-trending high, starting from L1N,
2+80mE to L10S, 7+00mE and trending southward off the
property. It corresponds to diabase dike outcrops.

E: A short high within the large formational low, located at L1S,
5+20mE, corresponds to several trenches in felsic metavolcanic
rocks. Two samples were taken in these trenches but assay
values were low. In one of the samples, pyrrhotite was noted.
F: A northwesterly-trending high, from L8S, 2+00mE to L10S, 3+20mE, has a more westerly strike than the diabase dikes. It is unknown what it represents.

HORIZONTAL LOOP EM SURVEY

Under supervision of the author, a horizontal loop EM survey was conducted on September 25th and 26th, 1991, by Wayne Pearson and helper. An Apex Parametrics MAXMIN II portable EM was used with coplanar, horizontal coils. This instrument measures the in-phase and quadrature components of the secondary field and expresses them as percentage of the primary field. Readings were taken at 444 and 1777 Hz with a coil spacing of 150 meters (Map 3 and 4, back pocket). A total of 521 readings were taken of both frequencies, over 12.64 km of line. The instrument has a repeatability of between +0.25% to +1%, depending on conditions, frequencies and coil separation used. Specification sheets are in the Appendix.

Conductors located during the survey correspond to an old abandoned power line in the southwest part of the grid and the power and telephone lines along Highway 576. Elsewhere, the in-phase component is generally flat. Several quadrature responses probably are caused by near surface features such as creeks or bedrock topography.

CONCLUSIONS AND RECOMMENDATIONS

The most important result obtained from this work is the location of the zinc-bearing zone on L5S near 5+60mE. This zone had
been drilled previously but to the author's knowledge has never been assayed before. Sampling core from the 1964 drilling should be done if it is at the Drill Core Library in Timmins. Also the observation that the fragment size is larger near this area may be significant for exploration.

Although the Horizontal Loop EM survey failed to locate any conductors, a zinc-rich zone with little copper would not be detected since zinc is not a good conductor. The cultural features also interfered with the EM survey.

It is recommended that a search be made for the old drill core and samples taken if it is found. If the core is lost, a new drill hole should be drilled to test the zinc-bearing zone.
REFERENCES


MacRae, B.A. and Deosaran, Maharaj, 1981: Godfrey Township, Cochrane District; Ont. Geol. Surv., Preliminary Map P.2075, Timmins Data Series. Scale 1 inch to 1/4 mile. Data compiled 1980.


CERTIFICATE

I, Roberta Bald, of the town of Lively in the District of Sudbury, hereby certify:

1) That I reside at 189 Margaret Avenue, Lively, Ontario
2) That I received an Honours B.Sc. in Geology from Laurentian University in 1975 and a M.Sc. in Earth Sciences from the University of Manitoba in 1981.
3) That I have practised my profession as geologist since graduation.
4) That this report, finished on February 10th, 1993, was written by me, based on geological field mapping, supervision of the linecutting and geophysical surveys, on my knowledge of the Timmins area, on previous geological reports and on assessment data obtained at the assessment office in Timmins.
5) That I am the holder of 100% interest in the claims described in this report.
6) That I am a Fellow of the Geological Association of Canada.

Dated at Lively, Ontario, this 10th day of February, 1993.

Roberta Bald, M.Sc., F.G.A.C.
Falconbridge hits on Moneta ground

Drilling a 600-metre-long geophysical anomaly on Moneta Porcupine Mines' (TSE) property in Godfrey Twp., near Timmins, Ont. Falconbridge intersected a narrow vein containing high-grade gold mineralization. The 1.5-metre interval assayed 82.2 grams per tonne over 1.5 metres including 306 grams over 0.4 metres. Concentrated within a 10-cm-wide quartz-carbonate vein, the gold is associated with cubic arsenopyrite.

The geophysical anomaly is represented by a 35-metre-thick graphic argillite horizon and is thought to be the source of the carbonaceous alteration. Moneta, which has staked 93 claims and optioned 13 claims to cover the on-strike potential of the new play, believes mineralization may be structurally controlled by a number of faults which parallel the Porcupine-Destor fault.

Falconbridge is optioning 20 claims and is required to spend $500,000 to earn a 50% interest in three lease groups in the Timmins area.

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SAMPLE LOCATIONS AND DESCRIPTIONS

GT-1-91: 3m E and 23m S of L1S, 4+40mE; quartz-carbonate vein from side of north-south trench, rusty stained, local dark green-black chlorite (?) inclusions; contains some greyish carbonate as medium- to coarse-grained crystals; quartz vein is variable in width and appears to fill in joints.

GT-2-91: 3m E and 21m S of L1S, 4+40mE; quartz-carbonate vein from side of same trench as sample 1; similar to sample 1 but with grey host rock; rusty stained quartz and greyish carbonate; trace pyrite and 1% pyrrhotite as local fine- to medium-grained crystals.

GT-3-91: 3m E and 20m S of L1S, 4+40mE; quartz vein from same trench as sample 1, with grey fragmental host rock containing up to 2% fine- to medium-grained, disseminated pyrite and local pyrrhotite; rusty stained quartz.

GT-4-91: 3m E and 17m S of L1S, 4+40mE; felsic fragmental from same trench as sample 1, containing clear, angular quartz crystals 0.1 cm diameter; also some cherty-buff- light grey fragments up to 0.5 cm; also some larger (up to 5 cm long) light grey felsic fragments with small black spots (sulphides?); both the matrix and the larger felsic fragments contain disseminated fine-grained sulphides; also small, angular, black argillite fragments up to 1 cm long; also some carbonate patches which weather brownish; overall about 3% sulphides as: magnetic pyrrhotite as fine-grained disseminations and as wispy patches; possible bornite? as small (1 mm) locally cubic crystals, iridescent blue; and fine-grained pyrite crystals in some felsic clasts.

GT-5-91: 10m N and 6m W of L1S, 5+20mE; very foliated felsic fragmental, some foliation planes are covered with gold coloured, soft material, possibly sericite?; contains some graphitic argillite fragments; some vuggy quartz veining with small, clear quartz crystals; trace fine-grained pyrite and possibly fine-grained iridescent blue bornite; some brownish stained carbonate crystals along some fracture planes; rare black, glassy quartz crystals less than 1 mm diameter with conoidal fracture.

GT-6-91: 10m N and 6m W of L1S, 5+20mE; from piece of blasted out float; felsic fragmental, similar to sample 5, foliated with very rusty foliation planes; containing quartz crystals less than 1 mm diameter, some cherty looking quartz as pods, possible felsic fragments now flattened along foliation plane; sulphides occur as long streaks parallel to the foliation.

GT-7-91: 11m S and 3m E of L3S, 6+40mE; taken from cliff along possible shear zone?; felsic fragmental with black argillite fragments; containing clear quartz crystals less than 1 mm diameter; some carbonate crystals; trace pale coloured sulphides.

GT-8-91: 7m E and 3m S of L5S, 5+40mE; from previously blasted area; dark grey felsic fragmental with black fine-grained argillite fragments and cherty light grey fragments; containing quartz crystals less than 1 mm diameter; 1% locally brassy coloured fine-grained disseminated pyrite; some carbonate; locally sulphides are iridescent; also some pyrrhotite as wispy patches; this sample is from the area with larger than normal fragments.
GT-9-91: 9m E and 3m S of L5S, 5+40mE; from same previously blasted area as sample 8; similar to samples 7 and 8.

GT-10-91: 6m W and 3m N of L5S, 5+60mE; rusty felsic fragmental from south side of trench.

GT-11-91: 4m W and 2m N of L5S, 5+60mE; sulphide-bearing felsic clast, taken from vertical east wall of trench; with some green epidote along layers; some disseminated pyrite especially within dark inclusions.

GT-12-91: 4m W and 4m N of L5S, 5+60mE; taken from vertical wall of trench in rusty area; felsic fragmental with quartz veinlets less than 2 mm wide; trace to 1% fine-grained disseminated pyrite; felsic cherty-looking white fragments and black fine-grained argillite fragments; black, glassy quartz crystals less than 1 mm diameter.

GT-13-91: 3m W and 11m N of L5S, 5+60mE; rusty, foliated felsic fragmental on same outcrop as large clasts.

GT-14-91: 9m E and 17m N of L5S, 5+60mE; felsic fragmental containing carbonate veinlets; some dark sulphides, probably pyrrhotite (magnetic); also some granular medium- to coarse-grained quartz; also less than 1% fine-grained disseminated pyrite.

GT-15-91: 41m N and 9m E of L5S, 5+60mE; from 4 parallel quartz veins on side of outcrop, within a 2 m wide zone; local rusty stained, vuggy; the quartz veins narrow and pinch out on top of the outcrop.

GT-16-91: 1m W and 57m N of L5S, 5+60mE; from 3 irregularly trending and locally folded quartz veins up to 5 cm wide, locally brownish stained, no sulphides seen; similar to sample 15.

GT-17-91: 1m E and 57m N of L5S, 5+60mE; taken along west edge of trench; from 2 small quartz veins running perpendicular to trench; rusty weathered felsic fragmental host rock containing pyrite.

GT-18-91: 7m W and 61m N of L5S, 5+60mE; from folded 5 cm wide quartz vein trending into trench; sample also contains fine-grained host rock with 1% pyrite; some magnetic pyrrhotite in quartz vein as blobs about 0.5 cm long.

GT-19-91: 50m S and 7m E of L0, 3+40mE; some float in sample of pyrite-bearing felsic fragmental with small amount of quartz vein; quartz flooding noted near this sample.

GT-20-91: 14m E and 46m S of L0, 3+40mE; from rusty area of outcrop; dark grey felsic fragmental with black argillite fragments and white felsic fragments with 2% fine-grained disseminated sulphides in matrix, some iridescent and others magnetic; quartz crystals less than 1 mm diameter; locally, matrix contains 2 mm long, rectangular white possible plagioclase crystals.

GT-21-91: 19m E and 45m S of L0, 3+40mE; rusty area of outcrop; felsic fragmental containing 1% fine-grained, disseminated pyrite and less than 1% quartz eyes, less than 1 mm diameter.
GT-22-91: 11m E and 48m S of L0, 3+40mE; rusty area of outcrop; felsic fragmental containing some pyrite and some streaks of pyrrhotite.

GT-23-91: 9m E and 56m S of L0, 3+40mE; from rusty area of outcrop; felsic fragmental containing about 1 to 2%, large cubic pyrite crystals up to 3 mm diameter; quartz crystals; less than 1% pyrrhotite as streaks; also some iridescent sulphide, possibly chalcopyrite? (soft, scratched by nail).

GT-24-91: 4m W of L1S, 3+80mE; from rusty area of outcrop; felsic fragmental with minor pyrite; similar to sample 21

GT-25-91: 20m S and 4m E of L1S, 4+20mE; float, quartz vein with some black-dark grey host rock inclusions; quartz is coarse-grained, locally brown- rusty stained; some pyrrhotite in host rock inclusions/wall rock and also contains some sericite.

GT-26-91: 16m S of L1S, 4+40mE; from rusty area of outcrop; quartz flooding in felsic fragmental with brownish sericite? along foliation planes.

GT-27-91: 5m E and 14m S of L1S, 4+40mE; quartz veins from quartz flooded area, locally rusty-brown stained; quartz veins are irregular and range from 1 to over 10 cm wide.

GT-28-91: 23m S and 23m E of L1S, 4+40mE; from 2.5 cm wide quartz vein, trending 015 AZ, vertical dip; rusty stained, no sulphides seen.

GT-29-91: 3m E and 10m S of L3S, 6+40mE; rusty stained felsic fragmental.

GT-30-91: 19m S of L3S, 6+40mE; rusty stained, foliated felsic fragmental, similar to sample 26.

GT-31-91: 6m E and 6m S of L5S, 5+40mE; from same blasted area as sample 8 and 9; felsic fragmental containing thin veinlets of white, fine-grained, crystalline carbonate; less than 1% fine-grained, disseminated pyrite; also about 2% fine-grained disseminated sulphides with a darker, brassier, locally iridescent colour, possibly chalcopyrite?; some pyrrhotite along fragment edge; quartz crystals.

GT-32-91: 10m E and 6m S of L5S, 5+40mE; quartz vein showing slickensides and rusty staining, locally looks greenish; some dark host rock inclusions as ribbons; from a discontinous, irregularly shaped gash of quartz about 3 cm at it widest point.

GT-33-91: 1m E and 11m S of L5S, 5+60mE; from side of old blasted out trench; felsic fragmental with about 1% sulphides as pyrite and magnetic pyrrhotite; contains some large buff-greenish cherty-looking fragments 5cm long, cut by quartz veinlets; also containing mottled fragments consisting of round to flower shaped areas about 2 mm diameter, possibly plagioclase crystals?; with dark grey-black aphanitic interstitial material.
BT-34-91: 1m E and 11m S of L5S, 5+60mE; from 5 cm wide portion of quartz vein which pinches out; containing gold coloured sericite and less than 1% pyrite; contains clear, very soft, radiating crystals in the form of wheat sheaves with milky white quartz between the radiating acicular crystals; also some dark green, soft chlorite rich host rock inclusions/blebs; sample is crumbly, sugary textured.

BT-35-91: 17m E and 12m S of L5S, 5+60mE; float from 1 m diameter boulder from blasted area; felsic fragmental containing abundant quartz crystals about 1 mm long and some white plagioclase laths about 2 mm long; fine-grained sulphides occur in black argillite fragments; pyrrhotite seen in matrix; contains black argillite and cherty felsic fragments.

BT-36-91: 5m W and 4m N of L5S, 5+60mE; from side of blasted out trench; felsic fragmental containing large, white, subangular to subrounded felsic fragments up to 20 cm diameter but most fragments are less than 7 cm; fine-grained dark grey matrix is locally rusty weathered; local rusty spots can be seen but no sulphides were seen.

BT-37-91: 6m E and 2m S of L1S, 3+00mE; felsic fragmental containing trace fine-grained, disseminated pyrite in matrix.

BT-38-91: 7m E and 36m S of L1S, 4+20mE; rusty weathered, foliated felsic fragmental containing quartz crystals less than 1 mm diameter; trace fine-grained, disseminated pyrite; some carbonate as veinlets and as fine- to medium-grained crystals; wispy patches of magnetic pyrrhotite; some sericite.

BT-39-91: 16m E and 38m S of L1S, 4+20mE; quartz vein with possibly two generations of quartz, one is milky white on weathered surface and grey on fresh surface and is cut by milky white to translucent quartz; local rusty stain; locally vuggy.

BT-40-91: 17m E and 37m S of L1S, 4+20mE; quartz vein locally vuggy, no sulphides seen; local rusty staining.

BT-41-91: 18m E and 41m S of L1S, 4+20mE; quartz vein, rusty stained, locally vuggy.

BT-42-91: 19m E and 41m S of L1S, 4+20mE; locally vuggy quartz vein with local rusty stain, no sulphides seen; up to 5 cm wide.

BT-43-91: 21m E and 41m S of L1S, 4+20mE; quartz vein containing brownish "ribbons"; milky white quartz, medium- to coarse-grained; up to 5 cm wide.

BT-44-91: 22m E and 41m S of L1S, 4+20mE; folded quartz vein, rusty along fractures, some dark greenish host rock inclusions; host rock near quartz vein margin is slightly schistose.

BT-45-91: 25m E and 54m S of L1S, 4+40mE; quartz vein, locally vuggy, brown stained, local pods of fine-grained, light green, very soft sericite?; irregularly shaped.
GT-46-91: 6m E and 47m S of L1S, 4+40mE; from narrow, fine-grained sagary quartz vein, rusty stained; less than 1 cm wide.

GT-47-91: 13m E and 34m S of L1S, 4+40mE; quartz vein brown-rusty stained; local brownish-greenish host rock "ribbons".

GT-48-91: 25m E and 53m S of L1S, 4+40mE; from narrow quartz vein, vuggy, brown stained.

GT-49-91: 7m E and 3m S of L5S, 5+40mE; felsic fragmental with quartz crystals less than 1 mm diameter; contains 2% fine-grained sulphides including pyrite, blueish iridescent chalcopyrite? and possibly brown sphalerite.
**Certificate of Analysis**

Roberta Bald  
Tamarack Geo. & Prospecting  
Box 486  
South Porcupine, Ontario  
PON-1HO

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**ACCURASSAY LABORATORIES**  
A DIVISION OF BARRINGER LABORATORIES LIMITED, REXDALE, ONTARIO  
BOX 426  
KIRKLAND LAKE, ONTARIO, CANADA P2N 3J1  
TEL.: (705) 567-3361  

Certificate of Analysis

December 13, 1991

Roberta Bald
Tamarack Geo. & Prospecting
Box 486
South Porcupine, Ontario
PON-1HO

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Certificate of Analysis

Robert Bald
Tamarack Geo. & Prospecting
Box 486
South Porcupine, Ontario
PON-1HO

December 16, 1991

Work Order #: 911417
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ORIGINAL
Certificate of Analysis

Robert Bald  
Tamarack Geo. & Prospecting  
Box 486  
South Porcupine, Ontario  
PON-1HO

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Work Order #: 911417

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December 16, 1991  
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MP - 2

**features**

- 1 gamma sensitivity and accuracy over range of 20,000 to 100,000 gammas.
- Operates in very high gradients, to 5000 gammas per metre.
- Ultra small size and weight.
- Up to 25,000 readings from only 8 D cells.
- Battery pack isolated from electronics for corrosion protection.
- Battery pack easily extended for winter use.
- Light-emitting diode digital display, with complete test feature.
- Unique no-glare polarized reflector permits easy reading in bright sunlight.
- Indicator light warning of excessive gradient, ambient noise or electronic failure.
- Digital readout of battery voltage.
- Rugged all metal housing for rough field use at all temperatures.
- Automatic recycling or external trigger features permit ready conversion to base station use.
- Short reading time.
- Broad operating temperature range.

The MP-2 is a portable one gamma proton precession magnetometer for field survey or base station use. The optimized design of sensor and circuitry using the latest CMOS components has resulted in a very lightweight, low power consumption, rugged and reliable magnetometer.

Light emitting diodes coupled with an ingenious optically polarized reflector combine solid state reliability with easy reading even in bright sunlight.

A standard automatic recycling feature allows ready use of the MP-2, with suitable (optional) interfacing, as a base station recorder in analogue or digital form. Alternatively, a remote trigger can be used.

The noise-cancelling dual-coil sensor and electronics have been so designed as to effectively eliminate reading problems due to virtually all magnetic gradients which may be encountered in field survey conditions.
## Technical Description of MP-2 Magnetometer

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</tr>
<tr>
<td>Power Source</td>
<td>Up to 5000 gammas/metre.</td>
</tr>
<tr>
<td>Sensor</td>
<td>8 alkaline &quot;D&quot; cells provide up to 25,000 readings at 25°C under reasonable signal/noise conditions (less at lower temperatures). Premium carbon-zinc cells provide about 40% of this number.</td>
</tr>
<tr>
<td>Harness</td>
<td>Omnidirectional, shielded, noise-cancelling dual coil, optimized for high gradient tolerance.</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>Complete for operation with staff or back pack sensor.</td>
</tr>
<tr>
<td>Size</td>
<td>-35°C to +60°C.</td>
</tr>
<tr>
<td>Console, with batteries: 80 x 160 x 250mm.</td>
<td></td>
</tr>
<tr>
<td>Sensor: 80 x 150mm.</td>
<td></td>
</tr>
<tr>
<td>Staff: 30 x 1550mm. (extended)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 x 600 mm. (collapsed)</td>
</tr>
<tr>
<td>Weights</td>
<td>Console, with batteries: 1.8kg.</td>
</tr>
<tr>
<td></td>
<td>Sensor: 1.3kg.</td>
</tr>
<tr>
<td></td>
<td>Staff: 0.6kg.</td>
</tr>
</tbody>
</table>

**SCINTREX LIMITED**  
222 Snidercroft Road,  
Concord, Ontario, Canada L4K 1B5  
TELEPHONE (416) 869-3260, TELEX 06-904570
- Five frequencies: 222, 444, 888, 1777 and 3555 Hz.
- Maximum coupled (horizontal-loop) operation with reference cable.
- Minimum coupled operation with reference cable.
- Vertical-loop operation without reference cable.
- Coil separations: 25, 50, 100, 150, 200 and 250 m (with cable) or 100, 200, 300, 400, 600 and 1000 ft.
- Reliable data from depths of up to 180 m (600 ft).
- Built-in voice communication circuitry with cable.
- Tilt meters to control coil orientation.
## SPECIFICATIONS:

### Frequencies:
- 222, 444, 888, 1777, and 3555 Hz.

### Modes of Operation:
- **MAX**: Transmitter coil plane and receiver coil plane horizontal (Max-coupled; Horizontal-loop mode). Used with reference cable.
- **MIN**: Transmitter coil plane horizontal and receiver coil plane vertical (Min-coupled mode). Used with reference cable.
- **V.L.**: Transmitter coil plane vertical and receiver coil plane horizontal (Vertical-loop mode). Used without reference cable, in parallel lines.

### Coil Separations:
- 25, 50, 100, 150, 200, & 250 m (MMI) or 100, 200, 300, 400, 600, and 800 ft. (MMI/F).

### Parameters Read:
- In-Phase and Quadrature components of the secondary field in MAX and MIN modes.
- Tilt-angle of the total field in V.L. mode.

### Readouts:
- Automatic direct readout on 90 mm (3.5") edgewise meters in MAX and MIN modes. No nulling or compensation necessary.
- Tilt angle and null in 90 mm edgewise meters in V.L. mode.

### Scale Ranges:
- In-Phase: ±20%, ±100% by push-button switch.
- Quadrature: ±20%, ±100% by push-button switch.
- Tilt: ±75° slope.

### Repeatability:
- ±0.25% to ±1% normally, depending on conditions, frequencies and coil separation used.

### Transmitter Outputs:
- 222 Hz: 220 Atm²
- 444 Hz: 200 Atm²
- 888 Hz: 120 Atm²
- 1777 Hz: 60 Atm²
- 3555 Hz: 30 Atm²

### Receiver Batteries:
- 9 V trans. radio type batteries (4).
- Life: approx. 35 hrs. continuous duty (alkaline, 0.5 Ah), less in cold weather.

### Transmitter Batteries:
- 12 V, 8 Ah Gel-type rechargeable battery. (Charger supplied).

### Reference Cable:
- Light weight 2-conductor teflon cable for minimum friction. Unshielded. All reference cables optional at extra cost. Please specify.

### Voice Link:
- Built-in intercom system for voice communication between receiver and transmitter operators in MAX and MIN modes, via reference cable.

### Indicator Lights:
- Built-in signal and reference warning lights to indicate erroneous readings.

### Temperature Range:
- -40°C to +80°C (-40°F to +140°F).

### Receiver Weight:
- 8 kg (13 lbs.)

### Transmitter Weight:
- 13 kg (29 lbs.)

### Shipping Weight:
- Typically 60 kg (135 lbs.), depending on quantities of reference cable and batteries included. Shipped in two field/shipping cases.

**Specifications subject to change without notification.**

---

**APEX PARAMETRICS LIMITED**

200 STEELCASE RD. E., MARKHAM, ONT., CANADA, L3R 1G2

Phone: (418) 495-1812  Cables: APEXPARAM TORONTO  Telex: 06-966773 NORDVIK TOR
May 14, 1993

Mining Recorder  
Ministry of Northern Development and Mines  
60 Wilson Avenue  
1st Floor  
Timmins, Ontario  
P4N 2S7

Dear Sir:

RE: Approval of Assessment Work on mining claims P 1176409 et al. in Godfrey Township.

The assessment credits for geology and geophysics, sections 12 and 14 of the Mining Act Regulations, as listed on the original Report of Work, have been approved as of May 13, 1993.

Please indicate this approval on the claim record sheets.

If you have any questions please contact Dale Messenger at (705) 670-5858.

Yours sincerely,

Blair Kite  
(Acting) Senior Manager, Mining Lands Branch  
Mines and Minerals Division

Enclosures:

cc: Assessment Files Office  
Toronto, Ontario  
Resident Geologist  
Timmins, Ontario
Report of Work Conducted
After Recording Claim
Mining Act

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 150 Cedar Street, Sudbury, Ontario, P3E 8A5, telephone (705) 670-7594.

Instructions:
- Please type or print and submit in duplicate.
- Refer to the Mining Act and Regulations for requirements of filing assessment work or contact the Mining Recorder.
- A separate copy of this form must be completed for each Work Group.
- Technical reports and maps must accompany this form in duplicate.
- A sketch, showing the claims the work is assigned to, must accompany this form.

Recorded Holder(s):

ROBERTA C. BALD

Address:

BOX 1572, 189 MARGARET AVE, LIVELY, ONT. 705-692-0638

Municipal Division:

PARCUPINE Township/Area: GODFREY TOWNSHIP

M or B Plan No.:

G - 3991

Date Work Performed:

From: June 8, 1991

To: Feb. 18th, 1993

Work Performed (Check One Work Group Only)

<table>
<thead>
<tr>
<th>Work Group</th>
<th>Type</th>
</tr>
</thead>
</table>
| - Geotechnical Survey | LINE CUTTING, GEODETICAL SURVEY (INCLUDING ASSAY)

Physical Work, Including Drilling

Rehabilitation

Other Authorized Work

Assay

Assignment from Reserve

MINING LANDS BRANCH

Total Assessment Work Claimed on the Attached Statement of Costs: $17,200.00

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name: ROBERTA BALD

Address: 189 MARGARET AVE, LIVELY, ONT.

Certification of Beneficial Interest: I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder’s name or held under a beneficial interest by the current recorded holder.

Date: Feb. 18th, 1993

Recorded Holder or Agent (Signature): ROBERTA BALD

Certification of Work Report: I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying:

ROBERTA BALD, 189 MARGARET AVE, LIVELY, ONT.

Telephone No.

705-692-0638

Date:

Feb. 18th, 1993

Certified by (Signature): ROBERTA BALD

For Office Use Only

Total Value Cr. Recorded: $17,200
Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to prioritize the deletion of credits. Please mark (✓) one of the following:

1. □ Credits are to be cut back starting with the claim listed last, working backwards.
2. ✓ Credits are to be cut back equally over all claims contained in this report of work.
3. □ Credits are to be cut back as prioritized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

Note 1: Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.

Note 2: If work has been performed on patented or leased land, please complete the following:

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.

<table>
<thead>
<tr>
<th>Claim</th>
<th>Name of Dealer</th>
<th>Cash</th>
<th>Work Done</th>
<th>Valuation &amp; Work Claim</th>
<th>Assigned to DE Claim</th>
<th>Date of Work</th>
<th>Amount of Work</th>
<th>Total Hours Worked</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
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<tbody>
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<td></td>
</tr>
</tbody>
</table>
## Statement of Costs for Assessment Credit

**Ministry of Northern Development and Mines**

**État des coûts aux fins du crédit d’évaluation**

**Mining Act/Loi sur les mines**

### Personal Information

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, 6th Floor, 159 Cedar Street, Sudbury, Ontario P8A 8A3, telephone (705) 670-7264.

### 1. Direct Costs/Côts directs

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Amount</th>
<th>Montant</th>
<th>Total global</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wages</strong></td>
<td>Labour Main-d’oeuvre</td>
<td>$8,750.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field Supervision Supervision sur le terrain</td>
<td>$750.00</td>
<td></td>
<td>$250.00</td>
</tr>
<tr>
<td><strong>Contractor’s and Consultant’s Fees</strong></td>
<td>Line cutting</td>
<td>$262.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Geophysics</td>
<td>$361.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Supplies Used Pourtresses utilisées</strong></td>
<td>Blueprinting</td>
<td>$27.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flagging Spraying</td>
<td>$13.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assay</td>
<td>$725.77</td>
<td></td>
<td>$766.54</td>
</tr>
</tbody>
</table>

**RECEIVED**

MAR 17, 1993

MINING LANDS BRAND

Total Direct Costs: Total des coûts directs $16,850.00

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

### 2. Indirect Costs/Côts indirects

**Note:** When claiming Rehabilitation work indirect costs are not allowable as assessment work.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Amount</th>
<th>Montant</th>
<th>Total global</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transportation Transport</strong></td>
<td>Mileage 784 km</td>
<td>$235.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lunches for 23 days</td>
<td>$115.00</td>
<td></td>
<td>$115.00</td>
</tr>
</tbody>
</table>

**Food and Lodging Nourriture et hébergement**

**Mobilization and Demobilization Mobilisation et démobilisation**

Sub Total of Indirect Costs Total partial des coûts indirects $350.20

Montant admissible (not greater than 30% of Direct Costs) Montant admissible (n’excédant pas 30% des coûts directs)

Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) Valeur totale du crédit d’évaluation (Total des coûts directs et indirects admisibles)

Note: La titulaire enregistrée sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n’est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d’évaluation présentée.

### Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d’évaluation.

<table>
<thead>
<tr>
<th>Total Value of the Credit d’évaluation</th>
<th>Evaluation totale demandée</th>
</tr>
</thead>
<tbody>
<tr>
<td>$16,850.00</td>
<td>$16,850.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>x 0.50 =</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$8,425.00</td>
<td></td>
</tr>
</tbody>
</table>

### Certification Verifying Statement of Costs

I hereby certify that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as **RECORDED HOLDER** I am authorized to make this certification.

**Signature**  
Feb 13, 1993

Note: Dans cette formule, lorsque il désigne des personnes, le masculin est utilisé au sens neutre.

### Filling Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

\[
\text{Total Value of Assessment Credit} \times 0.50 = \text{Total Assessment Claimed}
\]

### Attestation of the état des coûts

J’atteste par la présente que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d’évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu’à titre de __________ je suis autorisé (titulaire enregistrée, représentant, poste occupé dans la compagnie) à faire cette attestation.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>.Liberty Baird</td>
<td>Feb 13, 1993</td>
</tr>
</tbody>
</table>
Add 58,000 gammas to all readings.

Contour interval = 500 gammas.