CITADEL GOLD MINES, INC.

REPORT ON GEOLOGICAL MAPPING

HILLSIDE CLAIM GROUP

RECEIVED

WAWA, ONTARIO

1990-10-15

HILLSIDE.GEO
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HILLSIDE.GEO
SUMMARY AND CONCLUSIONS

Geological mapping was conducted using a flagged grid with a cut baseline and tie-line on a block of 3 contiguous claims owned by Citadel Gold Mines, Inc. The mapping was completed during September and October of 1990.

The Hillside claims are underlain by felsic and intermediate volcanic strata intruded by the dioritic intrusion breccia of the Jubilee stock along the western boundary, and a quartz-feldspar porphyritic intrusion of possible synvolcanic origin in the northeastern portion of the property. The regional foliation and bedding trend is easterly to northeasterly. Some rotation towards or into the trend of major northeast trending lineaments indicates fault movement along some lineaments, notably along the 'Highway 101 Fault' where rotation is into the lineament trend. These brittle features dip moderately, about 50° to the south.

A less obvious northwest trending, possibly conjugate set of structures is present on the property, as defined by quartz veins and mafic dyke trends. Auriferous quartz veins having similar strike trends to these structures, but variable dip directions on and proximal to the property include the O'Keefe vein, the Smith vein, the Stanley Mine vein, the Wawa Goldfields veins, and the 'Y-104' Creek Vein Extension. A northwest trending diabase dyke and discontinuous gabbroic dykes show a similar northwest strike direction. An areally continuous airborne magnetic high reflects the mafic dykes through the central portion of the Hillside property. This indicates a brittle dilatent zone may be present.

Based on observations made during the current geological mapping program, further detailed prospecting of the known quartz veins on the entire Citadel Hillside Property is warranted with an emphasis on the areas of the northwest trending structures. Where exposed, the O'Keefe vein is narrow, but high grade (up to 30 ounce gold per ton). It is strongly and consistently auriferous, but not well exposed. Having been relocated after more than 50 years, the area requires stripping and detailed sampling in order to properly assess the ore potential of the vein. In the words of T.L. Gledhill (1927): "The country near the O'Keefe and Smith veins has been heavily faulted. Further prospecting may reveal larger and richer veins."

Respectfully Submitted

R.G. Reid, B.A.Sc.
Geologist

HILLSIDE.GEO
INTRODUCTION

The three claims covered by this survey were staked by Citadel personnel in November, 1989. A cut and picketed Baseline and Tie-line were established along previously surveyed claim lines to provide control during geological mapping. Flagged and hip-chained compass lines were run at about 400 foot line spacing between the cut control lines.

Geological mapping was performed by the author under the employ of Citadel Gold Mine, Inc. The work was done in September and October of 1990.

PROPERTY OWNERSHIP, LOCATION AND ACCESS

The Hillside Property consists of three unpatented mining claims owned by Citadel Gold Mines, Inc. and numbered as follows:

SSM 1134845
SSM 1134846
SSM 1134847

the surface tights to the claim are patented, owned by the Township of Michipicoten.

The attached location plan (Figure 1) shows location of the claims, and indexes the individual map sheets (back pocket).

The property is located in the north-central part of McMurray Township in the District of Algoma and the Sault Ste. Marie Mining Division. It is about 2.5 miles northeast of the Town of Wawa, and Highway 101 passes through the northwest portion of the property. The northwest corner of SSM 1134846 lies in Wawa Lake.

HISTORY

Previous work on this property consisted of intermittent poorly recorded prospecting since the late 1800's. The first reported discovery of gold on the property is recorded by Gledhill (1927) as the O'Keefe Vein. Gledhill writes:

"Near the south shore of Wawa lake a narrow northwest-southeast vein was found close to the Smith vein. The country is very hilly in this vicinity, and the vein appears on the face of a steep ridge that faces north and borders the south shore of Wawa lake. The maximum width of the O'Keefe gold-quartz vein was about six inches. The quartz is crushed and shows pyrite and chalcopyrite and some fairly coarse gold. The country near the O'Keefe and Smith veins has been heavily faulted. Further prospecting may reveal larger and richer veins."

HILLSIDE.GEO
The Smith vein (Gledhill, 1927) strikes southeast, dipping to the northeast, from approximately the southwest corner of the Hillside property onto the adjacent claim group.

The O'Keefe vein with old workings comprised of three shafts or pits of undetermined depth were located during the present geological mapping program. No record of the age of the workings, or tonnage removed has yet been found. A series of exploration pits and trenches of unknown age have been observed along the topographic depression trending from the O'Keefe vein southeasterly towards the shaft of the Stanley Mine.

Gledhill's (1927) general description of the O'Keefe vein is confirmed, with coarse visible gold being noted during the current survey. A complete description of the mineralization observed and current assay results to follow (see Mineralization).

Historic gold production has occurred near the Hillside property from three separate locations. The previously mentioned Stanley Mine shaft is located approximately 800 feet south of the Hillside property's southern claim boundary. This mine was in production during 1936 and 1937, processing 1963 tons at an average grade of 0.043 ounces gold per ton.

Two adits, located about 1400 feet west of the Hillside property, were driven by Wawa Goldfields during or prior to 1934 (Melkman, 1934). These mine openings are immediately south of Highway 101 on the adjacent claims of Citadel Gold Mines, Inc. The adits are vertically separated by 63 feet, and drift along two separate quartz veins. A total of 615 feet of drifting was completed on the upper level, and 340 feet of drifting on the lower. No record of tonnage or grade extracted is available.

A surface plan of stripping on the 'Y-104 Vein' (Melkman, 1934), located approximately one-quarter mile southwest of the Wawa Goldfields adits, reports assay values for the upper vein ranging from trace over 24 inches to $262.85 (7.51 ounce gold per ton, gold at $35 per ounce) over 18 inches. Foster (1989) termed this occurrence the 'Creek Vein Extension'.

Another adit known as the Hillside Number 2 is located 350 feet north of the claim group. Rupert (1977) indicates the adit cross-cuts into a cliff face at 035°, then turns and drifts northeasterly. No reliable records are available, and the mine opening has been cemented shut.

Geophysical surveys covering the Hillside claim group include:

HILLSIDE.GEO
1) Airborne Aerodat survey, 1974 for Consolidated Morrison Exploration Ltd.
2) Airborne Dighem III survey, 1983 for Northern Horizon Resources Corp.

No ground geophysical surveys have been conducted on the property.

Geological mapping of the adjoining Citadel claims to the west was completed by the author concurrent to the present survey, and by personnel of Citadel Gold Mines, Inc. during 1988 (Foster, 1989).

Available reports pertaining to the general area include:

2) O.G.S. Map P2441, 1982.

GENERAL GEOLOGY

The property is underlain in part by Archean volcanic strata. ODM map P.2441 indicates that most of the Hillside claims are underlain by felsic to intermediate volcanic strata intruded by the dioritic intrusion breccia of the Jubilee stock along the western boundary, and a quartz-feldspar porphyritic intrusion in the northeastern portion of the property. The Helikian Firesand Carbonatite is a 4000 foot diameter concentrically zoned alkalic intrusive, shown on OGS maps P.828 and P.2441 to be located about 1.5 miles east of these claims.

The principle magnetic feature of the area is the Firesand Carbonatite and related lamprophyre dyke swarms which parallel its contacts, or fill narrow pre-existing fractures within several miles of the main plug. The Carbonatite Plug has high magnetic permeability, and creates a pronounced magnetic gradient across the claims. The peripheral narrow recessive dykes of lamprophyre up to 5 feet wide contain variable quantities of magnetite, up to 20%, and they create numerous magnetic anomalies throughout the district. In the Surluga Mine, two miles west of the Firesand Carbonatite, these dykes comprise about 5 percent of the rock mass.

WORK PROGRAM PARAMETERS

The geological mapping and sampling was controlled by use of a cut and picketed baseline and tie-line, with hip-chained and flagged crosslines. The baseline and tie-line were cut along HILLSIDE.GEO
previously surveyed east-west claim lines with stations every 100 feet. Crosslines were run at about 400 foot spacing (Az 360°) and flagged stations were established at 100 foot intervals between the cut control lines. Total cut line is 5,500 feet over the claims with 16,800 feet of flagged line established. The shore of Wawa Lake was mapped using a small rowboat and airphoto enlargement for control. Grab samples of observed quartz veins were taken for assay purposes at selected locations on the property.

PROPERTY GEOLOGY

MAFIC VOLCANIC ROCKS

FLOW UNITS:
Two areas of mafic volcanic rocks were encountered during the present survey, both near the east boundary of the southern claim (see Plan 3-2). They are massive to moderately foliated, fine to medium-grained rocks of chloritic composition. Some silicification is present. Mechanical stripping performed in the southeast corner of the property during 1989 exposed the volcanic contact of the more southerly mafic unit with the adjacent intermediate volcanic rocks. The northerly mafic unit may be a fine grained gabbro. Intrusive relationships were not observed.

INTERMEDIATE VOLCANIC ROCKS

FLOW UNITS:
Massive to foliated andesite flows underly approximately 60 percent of the Hillside property. They are weakly to moderately chloritic, comprised of massive flows, plagioclase porphyritic flows (1 to 30% phenocrysts), and local outcrops of autoclastic flow breccia.

Moderate to pervasive silicification occurs, mainly proximal to the topographic lineaments present on the property. There is a gradational increase in the intensity of silicification of the flows as one approaches the lineaments. A stockwork style siliceous alteration 1 to 3 mm out from 3 to 5 cm spaced fractures is present 100 to 200 feet from the base of the lineaments, and increases to a pervasive silicification of the volcanic rocks at and near the centre of the lineaments. The progressive siliceous alteration occurs along the major east-northeast and east-west lineaments, and to a lesser degree along the northwest trending lineament hosting the O'Keefe vein and the Stanley Mine.

VOLCANIC BRECCIA:
This unit is comprised of fragments of porphyritic andesite cemented by fine grained to aphanitic material of similar composition. The breccia occurs adjacent to and interbedded with
the felsic pyroclastic units. The intermediate volcanic breccias are of both pyroclastic and autoclastic origin.

TUFFS:
The tuffaceous units are dominantly crystal and ash tuffs. They maintain an intermediate andesitic composition with barely visible, well sorted crystals. Well sorted tuffs with plagioclase phenocrysts of up to 3mm are also present. Some of the plagioclase porphyritic flows may also be tuffs which have been incorrectly identified.

FELSIC VOLCANIC ROCKS

FLOW UNITS:
An outcrop of spherulitic rhyolite occurs north of Highway 101 immediately north of the Hillside property. It is comprised of 60 percent spherules up to 1 inch in diameter set in a glassy to microcrystalline matrix. The lateral extent of the unit is limited, and the true thickness of the individual flows could not be determined. Bedding in the area trends approximately 080° and dips 70° to the north, as determined from observed contacts with the underlying felsic pyroclastic units. This rock type is uncommon, but it is known elsewhere in the Wawa area (Sage, 1982).

PYROCLASTIC UNITS:
Felsic volcanic rocks include massive bedded ash tuffs, crystal and lapilli tuffs, quartz-eye tuffs and pyroclastic breccias. Within the central portion of the map area, they form a discontinuous east-northeast trending zone interbedded with intermediate volcanic rocks. Felsic volcanic rocks are the dominant rock type underlying the northwest portion of the property from 300 feet south of Highway 101 to the shore of Wawa Lake. Plagioclase phenocrysts up to 3mm in diameter compose 30 to 50 percent of the rock with occasional quartz eyes, set in a fine grained to aphanitic ash matrix of felsic composition. The pyroclastic breccias are comprised of angular blocks of similar composition to the tuffs set in a felsic ash and crystal matrix.

FELSIC INTRUSIVE ROCKS

QUARTZ-FELDSPAR PORPHYRY:
A massive to weakly foliated porphyritic intrusion underlies the northeastern 20 percent of the property. The composition is 20 to 40% euhedral plagioclase phenocrysts 3 to 5mm in size, and 3 to 30% blue quartz eyes 3 to 6mm in diameter. The intrusion is leucocratic, containing less than 5% mafic minerals, dominantly biotite.

The porphyritic intrusion interfingers into the surrounding volcanic rocks, and is of similar composition to some of the observed felsic quartz-eye crystal tuffs. The porphyry may be a
Some outcrops mapped as intrusive porphyry have a tuffaceous appearance, however evidence of an extrusive origin was not observed.

DIORITE:
The dioritic intrusive breccia of the Jubilee Stock underlies the claims immediately west of the Hillside property, and the northwest corner of the claim group. It is composed of up to 80 percent blocks of volcanic material in a medium grained dioritic matrix.

MAFIC INTRUSIVE ROCKS

GABBRO:
A number of gabbroic outcrops occur on the property along a northwest trend from the southeast corner. The dyke like bodies are relatively discontinuous, from a single outcrop to a maximum traceable strike length of 700 feet. The gabbro is medium to coarse grained, equigranular and hornblende rich. The dykes may occupy one or more northwest trending structures which have been later offset by movement along the prominent northeast trending topographic lineaments.

DIABASE:
A northwest trending diabase dyke outcrops along the road cut south of Highway 101 in claim 1134846. The rock is massive with a blocky jointing. It is fine to medium grained, black and locally magnetic. The dyke outcrops for a strike length of approximately 1,000 feet southeast from highway 101, dipping about 70° to the southwest. The diabase dyke was not observed north of Highway 101.

The enhanced magnetic data presented in the Dighem III Survey for Northern Horizon Resource Corp. (1983) indicates the diabase dyke and/or the gabbroic dykes described above are continuous towards the southeast. A narrow area of high magnetic relief of 500 to 800 gammas passes approximately under the southeast corner of the property, and terminates abruptly at Highway 101. The assymetry of the magnetic profile indicates a steep dip to the southwest, as confirmed by field observations along the road cut at Highway 101.

LAMPROPHYRE:
No lamprophyre was seen during the current geological mapping program. As the lamprophyre dykes south of Wawa Lake generally occupy northeast trending topographic depressions, narrow dykes may underlie the streams and talus-filled lineaments which traverse the property. A strongly magnetic lamprophyre dyke underlies Highway 101 immediately west of the Hillside property, being identified during diamond drilling (Citadel Gold Mines, Inc., Private Logs, 1988).
STRUCTURE

The rocks underlying the Hillside property are generally massive with little foliation developed, and only local shearing noted in the vicinity of some topographic depressions.

Where observed, the regional foliation and bedding trend is easterly to northeasterly. Some rotation towards and into the trend of major northeast trending lineaments indicates fault movement along some lineaments, notably along the 'Highway 101 Fault' where foliation rotates into the northeast trending lineament. These structural features dip moderately, about 50° to the south.

A less obvious northwest trending set of possibly conjugate structures having a similar strike direction but variable dip directions, is present on the property. The structures are defined by quartz veins and mafic dyke trends. The auriferous quartz veins occurring on this set of structures on and adjacent to the property include:
1) O'Keefe vein, dipping southwest.
2) Smith vein, dipping northeast.
3) Stanley Mine vein, dipping northeast.
4) Wawa Goldfields veins, dipping 30° to 40° northeast.
5) Creek Vein Extension, dipping northeast.
6) Trenched quartz veins at north claim boundary.

The northwest trending diabase dyke and discontinuous gabbroic dykes occupy a structural zone having a similar strike direction to the area's quartz vein trends. The airborne magnetic high corresponding to the mafic dykes through the central portion of the property may also be interpreted to represent the presence of a continuous brittle dilatent zone.

MINERALIZATION

A total of 21 rock (quartz) samples were collected and assayed during the current survey. The sample locations are shown on the surface geology plan (back pocket), and all assay results are listed in Appendix I.

Significant gold mineralization observed on the property is confined to the O'Keefe vein (Figure 2), where coarse visible gold as wires up to 3 mm long and flakes 2 to 4 mm in diameter, occurs in rusty sugary quartz with trace to 1% pyrite. One sample with visible gold assayed 30.97 ounce gold per ton (Sample 4139). A second sample of the quartz from the V.G. shaft area assayed 0.179 ounce gold per ton (Sample 4181). The O'Keefe quartz vein mineralization is variable within the three located pits and shafts, with the middle shaft quartz containing 3 to 5%
pyrite and minor galena and chalcopyrite. Assay results from this pit returned only 0.049 ounce gold per ton (Sample 4182). The most northwesterly pit, about 200 feet from the V.G. location, exposes rusty sugary quartz with trace sulphide mineralization (galena) and no observed gold. An assay of 0.784 ounce gold per ton (Sample 4183) confirms significant gold mineralization along the strike of the O'Keefe vein for a minimum of 200 feet. The width of the O'Keefe vein where exposed is 4 to 8 inches, comparable to the 6 inches reported by Gledhill (1927).

The Smith vein (Gledhill, 1927), located approximately 400 feet southwest of the O'Keefe vein is composed of similar sugary quartz, with a less rusty appearance and minor pyrite mineralization. The width of the Smith vein at 2 to 3 feet is encouraging with respect to potential mineralization along strike. Assay results however are less significant, returning an anomalous value of 0.008 ounce gold per ton (Sample 4106).

Other quartz and quartz-carbonate (calcite and ankerite) veins observed on the Hillside property contain only minor sulphide mineralization comprising mainly pyrite and occasional chalcopyrite. They are generally small, less than 1 foot wide, and show a consistent northwest trend. Only two small quartz veins contain anomalous gold, Samples 4125 and 4127 taken from the road cut south of Highway 101 returned gold values of 0.004 and 0.002 ounce per ton respectively.

A large bull-white quartz vein outcrops on the property along the shore of Wawa Lake. It is 2 to 3 feet wide, trends northeasterly dipping near vertical. The vein has been stripped above the cliff-face of the shoreline outcrop, and may have been the target vein of the Hillside #2 Adit 450 feet to the northeast. Only low gold value were returned from this vein, 0.004 and 0.006 ounce per ton (Samples 4134 and 4135 respectively). A narrow northeast trending shear zone about 75 feet north of the quartz vein dips 50° south, and is also weakly anomalous, assaying 0.002 ounce gold per ton (Sample 4133).

It is apparent from assay results and observations of the O'Keefe vein that gold mineralization may have occurred independent of sulphide mineralization. The abundance of northwest trending auriferous quartz veins in the general area of the Hillside property increases the potential of all the northwest structures noted on the property, including the major trend of mafic intrusive dykes. The structures show a dilatant character which allowed gold mineralization to concentrate in the quartz veins. Additional prospecting and sampling of all quartz veins along these trends is required.
The O'Keefe vein is strongly and consistently auriferous, but not well exposed. Having been relocated after more than 50 years, the area requires stripping and detailed sampling in order to properly assess the ore potential and true width along the strike of the vein. To repeat the recommendations of Gledhill (1927): "The country near the O'Keefe and Smith veins has been heavily faulted. Further prospecting may reveal larger and richer veins."

Respectfully Submitted

R.G. Reid
Geologist
REFERENCES


Rupert, R.J., 1973. Geology of McMurray Township and parts of surrounding townships. O.D.M. Preliminary Map Number 828. Scale 1:15840


APPENDIX I

Rock Assay Certificates

4104 - 4106
4125 - 4135
4137 - 4139
4180 - 4183
Certificate of Analysis

NO. 0721

SAMPLE(S) OF: Rejects (42)

SAMPLE(S) FROM:
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Project: P.O. #9829

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DATE: September 17, 1990
RECEIVED: September 1990

IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.
**Certificate of Analysis**

NO. 0762

SAMPLE(S) OF: Rock (11)

SAMPLE(S) FROM: Citadel

Project: P.O. # 9829

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NOTE: * denotes being checked.
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IN ACCORDANCE WITH LONG-ESTABLISHED NORTH AMERICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED OTHERWISE, GOLD AND SILVER VALUES REPORTED ON THESE SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.
TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
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# Geophysical Technical Data

**Ground Surveys** — If more than one survey, specify data for each type of survey.

- **Number of Stations**
- **Number of Readings**
- **Station interval**
- **Line spacing**
- **Profile scale**
- **Contour interval**

**Magnetic**

- **Instrument**
- **Accuracy** — Scale constant
- **Diurnal correction method**
- **Base Station check-in interval (hours)**
- **Base Station location and value**

**Electromagnetic**

- **Instrument**
- **Coil configuration**
- **Coil separation**
- **Accuracy**
- **Method**: □ Fixed transmitter □ Shoot back □ In line □ Parallel line
- **Frequency** (specify V.L.F. station)
- **Parameters measured**

**Gravity**

- **Instrument**
- **Scale constant**
- **Corrections made**
- **Base station value and location**
- **Elevation accuracy**

**Induced Polarization**

- **Instrument**
- **Method**: □ Time Domain □ Frequency Domain
- **Parameters** — On time
  - Off time
  - Delay time
  - Integration time
- **Frequency**
- **Range**

**Resistivity**

- **Power**
- **Electrode array**
- **Electrode spacing**
- **Type of electrode**
SELF POTENTIAL
Instrument ___________________________ Range
Survey Method ___________________________
Corrections made __________________________

RADIOMETRIC
Instrument ___________________________
Values measured ___________________________
Energy windows (levels) ___________________________
Height of instrument ___________________________ Background Count
Size of detector ___________________________
Overburden ___________________________ (type, depth — include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)
Type of survey ___________________________
Instrument ___________________________
Accuracy ___________________________
Parameters measured ___________________________
Additional information (for understanding results) ___________________________

AIRBORNE SURVEYS
Type of survey(s) ___________________________
Instrument(s) ___________________________ (specify for each type of survey)
Accuracy ___________________________ (specify for each type of survey)
Aircraft used ___________________________
Sensor altitude ___________________________
Navigation and flight path recovery method ___________________________
Aircraft altitude ___________________________ Line Spacing
Miles flown over total area ___________________________ Over claims only
### GEOCHEMICAL SURVEY - PROCEDURE RECORD

Numbers of claims from which samples taken

<table>
<thead>
<tr>
<th>Total Number of Samples</th>
<th>Type of Sample</th>
<th>Average Sample Weight</th>
<th>Method of Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Nature of Material)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Soil Horizon Sampled</th>
<th>Horizon Development</th>
<th>Sample Depth</th>
<th>Terrain</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Drainage Development</th>
<th>Estimated Range of Overburden Thickness</th>
</tr>
</thead>
</table>

#### ANALYTICAL METHODS

Values expressed in:  
- per cent □  
- p. p. m. □  
- p. p. b. □

Cu, Pb, Zn, Ni, Co, Ag, Mo, As, (circle)  
Others _____________________________

Field Analysis (____________ tests)  
- Extraction Method:  
- Analytical Method:  
- Reagents Used:  

Field Laboratory Analysis  
No. (____________ tests)  
- Extraction Method:  
- Analytical Method:  
- Reagents Used:  

Commercial Laboratory (____________ tests)  
- Name of Laboratory:  
- Extraction Method:  
- Analytical Method:  
- Reagents Used:  

Sample Preparation  
(Includes drying, screening, crushing, sieving)

<table>
<thead>
<tr>
<th>Mesh size of fraction used for analysis</th>
</tr>
</thead>
</table>

General

---
**Ministry of Northern Development and Mines**

**Report of Work**
(geophysical, geological, geochemical and expenditures)

**Instructions:**
- Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
- Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

**Claim Holder(s):**
CITADEL GOLD MINES INC

**Address:**
Box 54 Wawa Ont P0S 1K0

**Prospector's Licence No.:**
T4687

**Survey Company:**
SAME

**Name and Address of Author of Geo-Technical Report:**
REID, RUSSELL G, Box 1346, Wawa Ont P0S 1K0

**Credits Requested per Each Claim in Columns at Right:**

<table>
<thead>
<tr>
<th>Geophysical</th>
<th>Days per Claim</th>
<th>Geological</th>
<th>Days per Claim</th>
<th>Geochemical</th>
<th>Days per Claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electromagnetic</td>
<td></td>
<td></td>
<td>Magnetometer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnetometer</td>
<td></td>
<td>Marching</td>
<td>Radiometric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiometric</td>
<td></td>
<td></td>
<td>Other</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**Man Days:**

<table>
<thead>
<tr>
<th>Geophysical</th>
<th>Days per Claim</th>
<th>Geological</th>
<th>Days per Claim</th>
<th>Geochemical</th>
<th>Days per Claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electromagnetic</td>
<td></td>
<td></td>
<td>Magnetometer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnetometer</td>
<td></td>
<td>Marching</td>
<td>Radiometric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiometric</td>
<td></td>
<td></td>
<td>Other</td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**Expenditures (excludes power stripping):**

**Type of Work Performed:**
- Rock Assaying

**Performed on Claim(s):**
- SSM 1134846
- SSM 1134847

**Calculation of Expenditure Days Credits:**

<table>
<thead>
<tr>
<th>Mining Claim</th>
<th>Exp. Days Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSM 1134846</td>
<td>4</td>
</tr>
<tr>
<td>SSM 1134847</td>
<td>5</td>
</tr>
</tbody>
</table>

**Total Expenditures:**

$210.00 + 15 = 140.

**Instructions:**
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

**Certification Verifying Report of Work:**

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

**Name and Postal Address of Person Certifying:**
R.G. REID, Box 1346, Wawa Ont.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QUANTITY</th>
<th>UNIT</th>
<th>DESCRIPTION</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>0721</td>
<td>42</td>
<td>1</td>
<td>Au Sample Preparation</td>
<td>8,500</td>
<td>342.00</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>1</td>
<td>P.O. # 9829</td>
<td>2,500</td>
<td>104.00</td>
</tr>
</tbody>
</table>

COMMENTS:
Net 30 Days
## Bell-White Analytical Laboratories Ltd.

**To:** Citadel Gold Mines Inc.  
**P.O. Box 54**  
**Wawa, Ontario**

**From:** Bell-White Analytical Laboratories Ltd.  
**P.O. Box 187**  
**374 Browning St. Haliburton, Ontario**

**Invoices**

**No.: 35325**  
**Date: 09-25-90**  
**Page: 1 of 1**

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QUANTITY</th>
<th>UNIT</th>
<th>DESCRIPTION</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>0762</td>
<td>11</td>
<td>1</td>
<td>Au Sample Preparation</td>
<td>8.500</td>
<td>85.50</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>1</td>
<td>P.O. #9829</td>
<td>2.500</td>
<td>27.50</td>
</tr>
</tbody>
</table>

**Comments:**

Net 30 Days

**Total:** 121.00

---

ACCORDANCE WITH LONG-ESTABLISHED NORTH CANADIAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED, WHITE GOLD AND SILVER VALUES REPORTED ON SHEETS HAVE NOT BEEN ADJUSTED TO COMPENSATE FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.
**Ministry of Northern Development and Mines**

**Ontario**

**Report of Work**

(Geophysical, Geological, Geochemical and Expenditures)

---

**Mineral Act**

- Please type or print.
- If number of mining claims traversed exceeds space on this form, attach a list.
- Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
- Do not use shaded areas below.

---

**Claim Holder(s)**

**CITADEL GOLD MINES INC**

**Prospector's Licence No.**

**T 4687**

**Address**

**Box 54 Wawa Ont POS 1K0**

**Survey Company**

**SAME**

**Date of Survey**

- From: 04.09.90
- To: 19.09.90

**Total Miles of line Cut**

**Man Days**

**AIRBORNE CREDITS**

Note: Special provisions credits do not apply to Airborne Surveys.

---

**Credits Requested per Each Claim in Columns at right**

**Special Provisions**

- For first survey: Enter 40 days. (This includes line cutting)
- For each additional survey: using the same grid: Enter 20 days (for each)

**Man Days**

Complete reverse side and enter total(s) here

---

**Expenditures (excludes power stripping)**

**Type of Work Performed**

**21 ROCK ASSAYING**

Performed on Claim(s)

**SSM 1134846**

**SSM 1134847**

**Calculation of Expenditure Days Credits**

<table>
<thead>
<tr>
<th>Total Expenditures</th>
<th>210 $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Days Credits</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

---

**For Office Use Only**

**Total Days Cr.**

**Re: 21 ROCK ASSAYING**

**Prec. Day of Date Recorded**

**NOV 2 1990**

**Date Approved as Recorded**

**Nov 2 1990**

**Received**

**Nov 2 1990**

**Certification Verifying Report of Work**

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

**Name and Postal Address of Person Certifying**

**Box 1346 Wawa Ont**

**Date Certified**

**26/10/90**

**Certified by (Signature)**

---

**GEOLOGICAL**

- Other
- Other

**Geophysical**

- Electromagnetic
- Magnetometer
- Radiometric

**Geological**

**Geochimical**

**Electromagnetic**

**Magnetometer**

**Radiometric**

**Geophysical**

**Days per Claim**

**Expenditure Number**

**1134846**

**1134847**

**Expenditure Days Cr.**

**Total Number of mining claims covered by this report of work.**

**3**

---

**SIGNED**

**L. G. Reid**

**Date Certified**

**26/10/90**

**Certified by (Signature)**

---

**Ontario**

**1925**

---

**Geophysical**

- Electromagnetic
- Magnetometer
- Radiometric

---

**Geophysical**

- Electromagnetic
- Magnetometer
- Radiometric
Additional rock types of significant extent may be added as required, preferably as Subtype. 

- biotite, Magnetite, pyritic, dark grey, light grey, hard, associated with Jubilee breccia
- other

- Chloritic Schist
  - chloritic ochiat, ahered

- Biotite Schist

- Biotite-Basics Schist (Alteration)
  - Quartz eyes, specify oiz*

- Salty-Red to Change Joint Alteration and Blank
  - Specify intensity

- Quartz Veins
  - grey quartz
  - quartz-carbonate veins (specify X
  - Op) pinto quartz (also "p")
  - Cts) Highlight
  - Specify percentages (Specify cryohue sizes)
  - py, po, cp, sp, en, an, Au, no, gp

- Jubilee Type Breccias and Associated Faults

- Gabbro
  - Aphanitic, black
  - Biotite gabbro
  - Porphyritic (specify phenocrystal)

- Dioritic Tanks
  - Subtype (Combine appropriate additional)
  - "Apatite", aphanitic pale pink phase
  - Black fine grained
  - Quartz-fused, -risible Quartz
  - Feldspar
  - Biotite diorite with fraraanLa and

- Klastic Tanks and Conglomerates
  - Subtype (Combine appropriate additional)
  - Volcanic unlimes SAdinentary Tem t H
  - T) Felsic Unless Specified
  - Tae) Sericitic
  - Tc) chloritic
  - Teh) schistose
  - Te) quartz eyes
  - Tb) tuff breccias
  - T32 mm
  - Ti) lapilli tuff, 4 to 32
  - Ti) crystal tuff, M BM.
  - Tu) fine F-adiad tuff, <i a
  - Kano
  - Kcp) conKloawrate, polyairtlc
  - KA) arkaae, quartzite.
  - b) siltstone, •udntono, rrtiywacke

- Lamprophyre Phenocrystal
- Quartz *yea
- Vbx) flow breccia and al low 
- Vp) pillowed
- V.)
- Vah)

- Unit not described by standard designation
- H no core
- F fault
- ab sheared, •chietoe*
- se •ariclt* schist, oericitic
- fll sillcloua
- b* brvocU(ted)
- cb carbooata

- HAKIC Flow and KILATU) UNITC
  - u for iDt*r**diol* volcanics

<table>
<thead>
<tr>
<th>OUTCROP GEOLOGY</th>
<th>1078667</th>
</tr>
</thead>
</table>