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PRELIMINARY EVALUATION

OF THE

ECONOMIC POTENTIAL

ON THE

BENTON PROPERTY-BENTON TOWNSHIP

Porcupine Mining Division Northeastern Ontario N.T.S. 41-0-9

RECEIVED

MAR 05 1990

MINING LANDS SECTION

James C. Ireland Geologist April 1988



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1.1 INTRODUCTION

The Benton Township property is located in southwest Benton Township in the southern part of the Swayze greenstone belt, southwest of Timmins, Ontario (Figure 1). The area has a long history of exploration for base metals and gold, and numerous occurrences of both are documented. Widespread recent exploration for gold, which began in 1983, is the first reported since 1946. Recent increases in copper, zinc, and nickel prices has created renewed interest in the area and competition for ground will increase. Base metal exploration last took place in the mid-1970's and those efforts were minimal due to restricted access. Current logging operations have increased accessibility greatly within the last two years, bringing down the cost of exploration. Accessibility will continue to improve during the next three years. Several companies currently working along strike, both east and west of the Benton property, have reported newly discovered occurrences of gold and/or encouragement from on going programs on previously known occurrences. Companies active in Benton Township and adjacent townships include Western Pacific Energy Corp., Weaco Resources Inc., Grandad Resources Inc., Berle Resources Inc., Noranda Exploration Co. Ltd., Jerome Gold Mines/Muscocho Explorations/ McNellen Resources Inc., plus several more.

The writer was asked to assess the potential of the property for gold mineralization. In the course of writing the report, the polymetallic massive sulphide potential of the property became selfevident. The following report describes the property, outlines the features of economic interest, summarizes the results of past and present exploration activities on and adjacent to the property and presents an exploration strategy designed to evaluate the economic potential of the claim group.

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LOCATION MAP BENTON TOWNSHIP PROPERTY

1.2 SUMMARY AND RECOMMENDATIONS

The Benton Property consists of 68 unpatented, contiguous mining claims in central Benton Township. The property is situated on the southern arm of the Swayze greenstone belt in Northeastern Ontario. The area was prospected for gold in the 1930's and for base metals in the 1960's and early 1970's. Only minor activity was recorded during the interval years. Current high levels of exploration began in 1983 and were directed towards the search for gold.

The Benton Property is underlain by mafic metavolcanic flows, transitional mafic to intermediate flows, tuffs, chemical sediments and iron formations, argillite-graphite interflow horizons and clastic metasediments. The lithologies trend northwest across the property. Quartz porphyry flows or high-level intrusive bodies trend parallel with stratigraphy through the property. Dikes, sills and small gabbrodiorite stocks intrude all other rock types on the property. Regionalscale northwest trending shear zones characterized by chloritic, carbonate-pyrite and sericite-pyrite alteration have been observed on the property. Recent Government data indicates the presence of major areas of carbonatization with more locallized zones of extreme soda depletion. A Government airborne survey suggests large scale folding and deformation of local lithologies. Linear, northwest trending magnetic depressions coincide with observed zones of shearing and carbonate alteration. The Benton Property exhibits many of the physical and chemical characteristics common to established gold camps in the Canadian Shield, and several favorable environments for gold deposits exist on the property. The property is situated on a regional-scale structure hosting numerous gold occurrences, two of which are currently being evaluated from underground. Recent work on properties immediately adjacent to, and along trend of, the Benton property has resulted in a

-2-

new discovery to the northwest and significant diamond drill intersections to the southeast. There is no record of exploration for gold on the Benton Property.

An initial exploration program involving ground geophysical surveys, geological mapping, assaying and whole rock analysis is recommended. The available data indicates several areas peripheral to the existing claims have economic potential and these areas are recommended for incorporation into the property. A total expenditure of \$77,330. is recommended for Phase I exploration of the property. This figure represents recommended work on the initial 68 claim block.

Respectfully submitted,

James C. Ireland

Geologist April 18, 1988

2.0 PROPERTY

2.1 Claim Group

The Benton Property consists of 68 unpatented, contiguous mining claims. The claim group (Figure 2) is located in southwest and south-central Benton Township., approximately 72 miles southwest of Timmins, Ontario. The claim numbers and recording dates are listed below.

2.2 Claim Numbers

			Total	Recording Date
P.1058837	to P.1058904	inclusive	68	March 29, 1988

At the time of writing, the claims were registed to Mr. Paul Etapp, 492-14th Avenue, Senneterre, Quebec (JOY 2MO), who's representative in Ontario was Mr. Steven L. Masson, R.R.#4, Powassan, Ontario (POH 1ZO).



ONTARIO



2.3 LOCATION AND ACCESS

Benton Township is located in the District of Sudbury, Porcupine Mining Division, Ontario, at 47[°]43 N Latitude, 82[°]25 W Longitude (Figure 1), approximately 125 km southwest of Timmins. The new Dore Forest access road passes within 1 km of the west end of the property and a secondary logging road extends eastward into the west end of the claim group. The road extends west 45 km to Sultan on the C.P.R. main line, 55 km east to Highway 144 at the Shiningtree turnoff and north 90 km to Highway 101 West at Singetree Lake; all via the Dore Forest access road. The east part of the property is accessible by cance via the Woman River which passes through the southeast part of the claim block.

2.4 TOPOGRAPHY, VEGETATION AND CLIMATE

The Benton property is dominated by relatively flat, low relief characterized by sandy plains and swamp. The Woman River meanders characteristically through the southeast part of the claim block. Bedrock exposures occur as "islands" and low ridges which stand above the general topography.

The area was burned over about 1900 and is now forested with second growth jackpine, spruce, poplar, birch and balsam. Limited logging during the mid 1970's was carried out along the north boundary of the property. Cold winters and cool summers typify the local climate.

2.5 SERVICES

The closest source of supplies is Sultan, located 45 km by road to the southwest, on the C.P.R. transcontinental line. The village of Gogama, located 85 km by road to the east, at the junction of Highway 144 and the transcontinental line of the C.N.R., is the next closest source of

2.5 SERVICES (cont.)

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supplies. Men, equipment and services could be obtained in Timmins, 125 air km to the northeast, or in Sudbury 150 km to the south. Electrical power is not currently available in the area.

3.0 PREVIOUS EXPLORATION ACTIVITIES

3.1 Regional

The Swayze area has been prospected periodically since the early 1900's. Several iron formations were investigated initially, and by 1906, the base-metal potential was under evaluation in the southwest and southeast. Exploration for gold dates back to 1909, when initial discoveries were made in Chester Township in the southeast end of the Swayze belt and in Horwood Township, located in the north-central part of the Swayze belt.

The first major thrust in gold exploration and development occurred during the period 1929 to 1939, when many of the known gold occurrences were documented. A minor gold rush occurred during the period 1948 to 1949, during which several additional gold occurrences were discovered.

Some of the more important gold occurrences discovered during the period 1929 to 1949 are listed below.

Discovery Date	Occurrence Name	Township	Current * Status
1921	Young-Shannon Gold Mine (past producer)	Chester	under evaluation
1931	Kenty Mine	Swayze	11
1932	Halcrow-Swayze Mine	Halcrow	"
1933	Tionaga (Smith-Thorne) Mine	Horwood	inactive
1933	Swayze (Orofino) Mine	Silk/Horwood	development
1933	Kingbridge-Gomak Mine (past producer) (Murgold)	Chester	under evaluation
1936	Strathmore Mine	Chester ·	development
1938 (?)	Rundle No. 1 (South) Mine	Newton	development
1938	Jerame Mine (past producer)	Osway .	development
1946	Joburke Mine (past producer)	Keith	inactive
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* "under evaluation" refers to surface exploration incl. diamond drilling "development" refers to surface and underground activities "inactive" refers to no work on patented claims in 1987 3.1 Regional (cont.)

Only sporadic exploration was carried out in the Swayze area during the period 1950 to 1970. During that period the Reeves Asbestos Mine in Reeves Township was discovered and put into production by Johns-Manville Company. The mine produced periodically between 1968 and 1975.

The discovery of a "porphyry copper" occurrence in the Rush Lake area in 1970 led to extensive base metal exploration which continued until 1981. The most significant results were reported by M.W. Resources Ltd., who reported reserves of 2.4 million tons grading 2.7% zinc and 0.39% copper on their Cunningham Township property.

The discovery of Hemlo in 1981 resulted in widespread speculative staking in the Swayze area. Many of the documented gold occurrences were staked at that time and are still held. Between 1983 and 1988, several new gold occurrences were discovered. Currently, most of the known and new gold occurrences are being subjected to preliminary evaluation.

Recent high base metal prices have resulted in additional staking in relatively unexplored areas of the Swayze. Targets for exploration are airborne INPUT anomalies from a Government of Ontario Magnetometer and Electromagnetic survey of the south half of the Swayze area, released in 1982.

The area was mapped in 1944 by V.B. Meen for the Ontario Department of Mines. In 1977 and 1978 the area was re-mapped by G.M. Siragusa for the Ontario Geological Survey. A final report by Siragusa was released in 1987.

In 1982, the Ontario Geological Survey released the results of an airborne magnetometer and INPUT electromagnetic survey, flown by Questor Surveys Limited in 1980 and 1981. The survey covers all or part of 42 townships in the southern half of the Swayze belt.

3.2 Local

Past exploration activities in the immediate area of the Benton Property were obtained from the Assessment Files, Resident Geologist Office, Timmins. Property locations and drill hole locations are located on Figure 3.

3.2.1 Benton Township

Property A - Blackstein/Kanovsky (1949)

-nine packsack diamond drill holes totalling 1109 feet were drilled on claim S.40249. Drill hole summaries indicate andesites and interflow sediments were encountered. No assays or detailed drill logs available.

-nine packsack diamond drill holes totalling 1119 feet were drilled on claim S.40250. Andesites cut by quartz stringers were reported. No assays or detailed drill logs available.

Property B - Blue Falcon Mines (1985)

-a regional airborne geophysical survey was flown in 1985. Magnetometer and V.L.F. results were filed.

Property C - Grandad Resources Ltd. (1987-present) Canadian Nickel Company Ltd. (1983,-84,-85) Burton Option (see Esther Twp.)(1928)

Property D - Canadian Gold and Metals Ltd. (1981)

-INPUT airborne magnetometer and electromagnetic survey for Benton Resources, Osway Resources, Mallard Resources and 4x4 Syndicate.

PROPERTY E - Granges Exploration Aktiebolag (1976, -77, -78)

-ground magnetometer and electromagnetic surveys on 4 properties followed by 5 diamond drill holes.

Hole No.	Length	Property	Comments
SW-38	367ft.	Ea.	6 sections 18in. to 20ft. wide contain 10 to 15 percent graphite and 1 to 5 percent pyrite/pyrrhotite

3.2.1 Benton Township (cont.)

Hole No.	Length	Property	Comments
SW-39	344ft.	Eb.	4 sections 5ft. to 173ft. wide containing 15 to 20 percent graphite and 1 to 5 percent pyrite
SW-4 0	344ft.	Eb.	7 sections 4in. to 24in. wide containing 15 to 20 percent graphite 1 section 4.4ft. wide contains 10 percent pyrite
SW-44	361ft.	Ec.	6 sections 29.5ft. to 88.6ft. wide containing 10 to 20 percent graphite minor pyrite in one section
SW-50	204ft.	Ec.	3 sections 6in. to 36in. wide containing up to 10 percent pyrite and/or pyrrhotite

Property F - Kirkland/Hudson Bay Option (1939)

-a gold bearing quartz-carbonate-pyrite vein was trenched and sampled just east of the Benton Township line in Osway Township, 300m south of the Wakami River. Only a few anomalous values were obtained. The vein is up to 2ft. wide and occurs in a carbonated shear zone containing altered porphyry.

Property G - Noranda Exploration Company Ltd. (1974, -75, -76, -77)

-ground magnetometer and electromagnetic surveys carried out on 4 properties. A total of 3 holes were drilled on 3 properties.

Hole No.	Length	Property	Comments
		Gd.	Mag and H.L.E.M. only
B-77-2	405ft.	Ga.	5 sections from 1.5ft. to 51.0ft. wide containing abundant graphite in argillaceous slates within a dacitic tuff/flow sequence. trace chalcopyrite, 1-5% pyrite plus marcasite

Hole No.	Length	Property	Comments
B-77-1	452ft.	Gb.	3 sections 0.7ft. to 4.9ft. wide containing abundant graphite in serpentinitic tuffs-Hangingwall and Footwall rocks serpentinized peridotite. Possible acid porphyry in the graphitic unit.
в-77-3	157.5ft.	Gc.	152.5ft. of mineralized rhyolite to dacite with 10 to 15 percent pyrite-pyrrhotite throughout. Some sections have trace chalcopyrite. Numerous 1 to 2ft. wide semi-massive sulphide bands, pods, stringers.
		N.E	9in 1985 Noranda re-acquired this property as part of a larger package located primarily in Mallard Twp. Ground geophysics was carried out at that time. (Ref:Assessment Files, Timmins re: Berle Resources Option File: T-2305)

Property H - Weaco Resources Ltd. (1985,-86)

-In 1985, Weaco flew an airborne magnetometer and V.L.F.-E.M. survey over the eastern one-third of Benton Township, where two claim blocks were located. In 1986, ground geological mapping was carried out on the two claim groups. Approximately 400 rock samples were collected and over 300 analysed. Geochemically anomalous gold vlaues up to 650 p.p.b. Au were obtained from several zones scattered across the two claim groups. Late in 1986, three diamond drill holes were completed on the north group. One hole, drilled near the north boundary of Benton Township returned 5.5ft. averaging 0.09 O.P.T. gold from a rhyolite-breccia zone mineralized with fine disseminated magnetite and 1 percent pyrite.

3.2.2 Esther Township

Property C - Grandad Resources Ltd.-Burton Option (1987-present)

The original gold showing was discovered circa 1928 by A. Burton Sr. In 1928, Northern Aerial Minerals Exploration Ltd. trenched and pitted the showing. A 33ft. shaft was sunk to intersect the downdip extension of a west dipping north-south striking, quartz vein. Numerous trenches followed the mineralized zone east from the shaft for approximately 2500ft.

Hollinger Consolidated optioned the property and completed approximately 32 boreholes during the late 1930's and early 1940's. In 1945, ten additional drill holes were completed by Burscott Gold Mines. The drilling outlined a zone roughly 250ft. long, apparently plunging west, with values up to 0.444 oz/ton gold over 2.65ft. A zone consisting of a possible 38,000 tons grading 0.345 oz/ton gold down to the 300ft. level was outlined.

In 1983, the Canadian Nickel Company Ltd. optioned the original 6 patented claims and 20 unpatented claims from the Burton brothers. They added an additional 21 claims at that time, bringing the property to 47 claims totalling approximately 1900 acres. At that time Canico entered into a joint venture agreement with Golden Hope Resources Inc. on the property. A summary of work carried out by Canico in 1983,-84 and -85 is given below.

-1983 - grid cut, detailed geological mapping and prospecting, ground magnetometer survey, ground V.L.F.-E.M. survey over entire property

- -in the vicinity of the showings; humus and soil sampling, detailed Induced Polarization Surveys.
- -limited stripping, 9 diamond drill holes totalling 4,830ft. were drilled, but no significant mineralization was encountered.
- -1984 additional humus sampling along strike from the Shaft zone. extensive stripping on the Shaft zone and the East zone, plus other zones where magnetic data suggested complex drag folding may have occurred.
- -an additional 17 diamond drill holes were completed on the Shaft and East zones. A total of 1,536ft. was drilled.

The proposed follow-up diamond drill program was never initiated, and, in 1985, Canico and Golden Hope dropped the option on the Burton property.

3.2.2. Esther Township (cont.)

The results of the 1984 program are summarized in:

Perry, J. (1985) "Annual Report of Activities, Canico-Golden Hope Agreement, Burton Property, Esther and Benton Townships, Porcupine Mining Division, NTS 41-0-9" (Timmins Resident Geologist Office, File T-2595)

Exerpts of which are included below:

4.3 Summary of 1983 Exploration

In 1983 5.82 km of baseline and 98.4 km of grid lines were established on the property by a contract line cutter. Crosslines were established at 100 metre spacing and pickets marked at 25 metre stations along the lines.

Detailed geological mapping, prospecting, and sampling was carried out over the entire property. A humus and soil orientation sampling program was carried out. In the shaft area 4 lines 50 metres apart were sampled 200 metres north and south of the baseline at 10 metre intervals. An additional 5 lines were sampled at 20 metre intervals.

An IP survey was carried out over a total of 11.3 line km, in the area of known showings. The entire grid was covered with both magnetometer and VLF surveys.

An attempt to use a backhoe to strip the overburden down to bedrock in areas of interest failed due to wet ground conditions and inadequate equipment.

Nine boreholes totalling 1472.3 metres were drilled using a Canico owned and operated Longyear 24 diamond drill.

5.0 REGIONAL GEOLOGY

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The claims are underlain by rocks of the southeast arm of the Swayze Archean greenstone belt. The belt is approximately 12 km wide in the area of the claims and narrows to the southeast. The rocks consist predominantly of mafic to intermediate volcanics and metasediments. The regional foliation is 100° to 120° with a very steep to vertical dip.

The mafic volcanics are predominantly fine-grained pillow basalts. Thicker, medium to coarse-grained, gabbroic flows and subvolcanic sills are also fairly common. Several major bands of metasediments varying from coarse conglomerates to shales and siltstones outcrop on the property and continue for great distances along strike (10's of kilometres) in either direction.

The rocks within the claim area occur as a south-facing homoclinal sequence, dipping vertically $\pm 10^{\circ}$.

6.0 1984 EXPLORATION PROGRAM

In May 1984 additional humus sampling was carried out along strike from the shaft area. During August and September the Shaft Zone and the East Zone mineralized areas were stripped and channel sampled. Overburden trenching was also carried out on several lines to the east of the East Zone where complex magnetic data suggested that drag folding might occur in the volcanics. During October a seventeen (17) hole diamond drill program was completed. - 4 -

6.1 Humus Sampling (Figs. 3,4 Sheets 1-3)

In May 1984, the humus survey was extended and samples were collected at 25 m intervals on all lines from 10,500E to 11,800E between 9700N and 10,300N; and from 8000E to 10,300E between 9700N and 10,400N. All samples were assayed for gold (ppb) and for arsenic (ppm).

No significantly high anomalous gold assays were recorded but a number of low values were found; most of these are single point anomalies as indicated below: 25 ppb @ 10,900E/9850N; 16 ppb @ 11,000E/10,125N; 18 ppb @ 8100E/ 10,200N; 16 ppb @ 8500E/9975N; 14 ppb @ 9200E/10,250N. Three assays of 10, 10 and 12 ppb Au were located at three adjacent points on lines 9100E and 9200E between 9975N and 9900N.

A few single point arsenic anomalies were also located: 110 ppm at 9100E/ 9875N and at 10,500E/9900N values of 280 and 240 were recorded where 300 ppm had been obtained during the 1983 survey. However, an 18,000 ppm As anomaly which had been obtained from 9700E/10,160N in 1983 did not repeat during the 1984 survey and a value of only 11 ppm As was recorded.

With the exception of line 10,500E, none of the gold and arsenic anomalies were found to be coincident. The anomalies did not outline any additional high priority target areas for further exploration.

6.2 Overburden Stripping

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In August 1984, a D7 Caterpillar tractor and a tracked backhoe with a 1.25 cubic yard bucket were used to strip two areas on the property. The first area (East Zone) is located between 104+00E and 106+50E and averages from about 30 m to 50 m wide. The second area (Shaft Zone) is located between 99+30E and about 101+00E. The stripped area is about 40 m wide at the shaft, narrowing to about 10 m towards line 101+00E. As the stripping proceeded both areas were cleaned off using high pressure water supplied by a Wajax fire pump.

In late September and early October, 1984, the backhoe was again used to excavate a number of trenches in overburden on lines 108+50E, 109+00E, 109+50E, 110+00E, 110+50E, 101+50E and 101+75E.

6.2.1 East Zone (Fig. 5)

On the East Zone excavation began by following the line of old (c. 1934?) trenches; this allowed the mineralized zone to be traced almost completely across the stripped area. The country rocks consist of medium-grained basalts (gabbro?) which are interpreted to consist either of thick flow units or subvolcanic sills. Pillowing can be observed in adjacent rocks to the north and south of this zone but no pillows were noted in the footwall or hangingwall units. At several locations the mineralized area occupies shallow, rubbly depressions and could not be examined; elsewhere the mineralization can be observed striking consistently E-W (grid) completely across the stripped area. The zone varies in width from about 0.5 m to 4.0 m and is variably mineralized throughout. The narrower zones, as at line 105+50E, are commonly very weakly mineralized, pyrite + pyrhotite, with scattered erratic and narrow quartz veins. The zone also commonly shows a stronger foliation than

the adjacent country rocks and a very sharp contact with the country rocks. Within the wider mineralized sections, quartz bands, veins and lenses are commonly much thicker and more persistent. Disseminated pyrite and arsenopyrite tend to be associated with the quartz rich sections; pyrrhotite is ubiquitous. Mineralization is not consistent across the zone but the less well mineralized portions still show heavy silicification and iron carbonate alteration. This appears to be more concentrated on the hangingwall (south) side.

- 5 -

A diamond saw was used to cut channels (fig. 5) every few metres across the mineralized zone. Assay values from the channel samples collected are indicated on the plans (fig. 5). The best result was obtained from channel B23 which yielded 4.5 ppm Au over 2.5 metres. This includes 0.4 m section which assayed 12.11 ppm gold.

The mineralized zone displays very few small scale "z" fold structures similar to that cut by channel "B7" (about 105+70E section). Between 104+50E and 105+00E some possible indications of folding can be observed but these are not definite. The mineralization may be conceptrated along quite narrow, tight, drag folds. A plunge measurement of 40°W was obtained from the folded sediments in the southwest corner of the stripped area. This confirms measurements taken in the Shaft Zone area.

6.2.2 Shaft Zone (Fig. 6)

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At the Shaft Zone an area was power stripped and cleared from the vicinity of the shaft eastwards towards the camp. After the area had been washed down it was possible, for the first time, to observe that a fold structure controlled the mineralization. It could also be noted that the northern limb of this drag fold is marked only by a very narrow mineralized zone.

The area underlain by the fold, apart from the margins, is almost completely rusted out. The gossan area is commonly a deep purplish-brown colour; it is soft and friable in texture with only local competent patches where quartz veining exists. At the northern edge of the fold the mineralization consists of heavily disseminated arsenopyrite and pyrite in silicified basalt (gabbro?). A channel sample from the central portion of the fold yielded 14.00 ppm gold over 0.7 metres and a sample from the northern edge gave 18.65 ppm gold over 0.55 metres. All channel sample assays are indicated on figure 6.

Three plunge measurements from this area indicated that the fold had a plunge of 30° to 40° west. These observations and the recognition of the fold structure enabled a drill program to be laid out which could predict, with reasonable accuracy, where the mineralization would be intersected.

Alteration appears to be restricted to the immediate vicinity of the fold, particularly on the hangingwall side. On the narrow northern limb, unaltered basalt is in contact with the mineralized zone.

6.3 Overburden Trenching

In late September and early October several overburden trenches, each about 100 m to 125 m long, were dug between lines 108+50E and 110+50E (figure 7). Two shorter trenches were also dug on lines 101+50E and 101+75E (figure 8). The longer trenches were intended to test an area of complex magnetics where a fold structure was suspected to exist. If this were the case then mineralization similar in nature to that found at the Shaft Zone might exist.

- 6 -

The mineralized zone was observed extending over widths of 5 m and 8 m on lines 108+50E and 109+00 respectively. It consists of strongly carbonatized and silicified basalt with patchy quartz, quartz veins and very minor pyrite. On lines 109+50E and 110+00E a very narrow zone about 10 cm wide was noted; this widens to about 3.5 m on line 110+50E. It is unlikely that it is part of the main mineralized zone since it is offset from the zone and appears to cut across strike in this area. In all of the trenches the foliation measurements in the basalts indicate a consistent east-west trend, however, when the actual units (basalts and sediments) are mapped these indicate a strike of about 300° to 310° . The strike of the mineralized zone parallels that of the country rocks.

It is considered that the apparently complex magnetic picture (figure 9, sheets 1,2) in this area is at least partly due to the change in strike of the country rocks which was not recognized when the mag data was contoured.

Two short trenches were excavated on lines 101+50E and 101+75E, immediately east of the Canico camp. No mineralization was noted in the latter trench, however, in 101+50E a 0.4 m section of strongly foliated, silicified and quartz veined basalt assayed 2.26 ppm gold. This mineralization strikes toward the Shaft Zone and probably extends into the southern limb of the Shaft Zone drag fold.

7.0 DIAMOND DRILLING

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Seventeen (17) diamond drill holes (Table 1) were completed on the Burton property during October. The total length drilled amounted to 468.17 metres (1536 feet). Eleven (11) holes were drilled on the Shaft Zone and six (6) on the East Zone, Drill logs and sections are located in Appendix 1.

7.1 Shaft Zone

Drilling at the Shaft Zone commenced on line 100+00E and continued westwards to line 99+40E with sections spaced every 20 metres (figure 6). As noted above, the recognition of a westerly plunging fold structure in this area enabled the holes to be spotted so that they would intersect the structure. Mineralized intersections with assay values greater than 1 ppm Au are shown on Table 2. The best section to date is 99+60E where borehole 72513 intersected 9.34 ppm Au over 7.75 m and borehole 72515 intersected 8.91 ppm Au over 8.00 metres. The deepest intersection in the current drill program is from borehole 72520 (section 99+40E) where 12.47 ppm Au was obtained over 3.13 m at a vertical depth of 38.15 m to 41.28 m. The only holes which did not intersect any significant mineralization were 72516 and 72517 which were drilled on the southern edge of the structure and missed the mineralized zone.

TABLE 1

BH #	<u>Co-ordinates</u>	D1p	Bearing	Depth (m)
72508	99+95N/100+00E	-55 ⁰	North	10.67
72509	99+95N/100+00E	-60 ⁰	South	14.33
72510	99+90N/99+80E	-90 ⁰	-	18.59
72511	99+90N/99+80E	-50 ⁰	South	22.86
72512	99+90N/99+80E	-50 ⁰	North	14.94
72513	99+98N/99+60E	-90 ⁰	-	32.00
72514	99+98N/99+60E	-57 ⁰	North	25.60
72515	99+91N/99+60E	-89 ⁰	West	32.61
72516	99+91N/99+60E	-58 ⁰	South	35.05
72517	99+75N/99+4DE	-90 ⁰	-	72.24
72518	99+06N/104+30E	-45 ⁰	North	16.46
72519	99+06N/104+30E	-60 ⁰	North	25.91
72520	99+85N/99+40E	-90 ⁰	-	54.86
72521	99+06N/104+52E	-45 ⁰	North	16.46
72522	99+06N/104+52E	-60 ⁰	North	32.92
72523	99+06N/104+74E	-45 ⁰	North	15.24
72524	99+06N/104+74E	-60 ⁰	North	27.43

Total 468.17 m

(1536 feet)

JP/cb January 31, 1985

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TABLE 2

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BH #	From	-	<u>10</u>	Length	Grade/ppm Au
72508	5.61	-	6.32	0.71 m	9.98
72509	7.69	-	9.95	2.26 m	8.13
72510	9.14	-	11.41	2. 26 m	17.82
72511	15.54	-	15.96	0.42 m	1.82
72512	9.74	-	10.36	0.62 m	14.45
72513	4.20 11.65 13.45 19.05		4.88 13.45 14.50 26.80	0.68 m 1.80 m 1.05 m 7.75 m	7.52 1.05 7.80 9.34
72514	3.66 6.14 8.82 10.00 11.77 13.40 17.43 19.88		6.14 7.42 10.00 11.77 12.35 15.55 19.65 21.35	2.48 m 1.28 m 1.18 m 1.77 m 0.58 m 2.15 m 2.22 m 1.47 m	15.12 1.75 1.39 10.45 1.44 1.08 1.37 3.83
72515	21.74 23.61	-	22.90 31.61	1.16 m 8.00 m	2.23 8.91
72518	9.56 13.93	-	11.35 14.65	1.79 m 0.72 m	4.40 6.45
72519	16.17 16.41 16.90 19.34 21.39 22.50		16.41 16.90 17.83 20.57 22.50 22.76	0.24 m 0.49 m 0.93 m 1.23 m 1.11 m 0.26 m	2.54 16.18 2.26 1.78 10.42 2.26
72520	26.45 38.15	-	27.13 41.28	0.68 m 3.13 m	7.89 12.47
72521	11.85 13.51	-	12.15 13.88	0.30 m 0.37 m	2.81 16.01
72522	20.22 21.55 21.90 25.68 27.43		21.02 21.90 22.62 26.56 27.96	0.80 m 0.35 m 0.72 m 0.88 m 0.53 m	1.54 2.40 7.03 3.74 5.04
72523	7.20 8.65 10.80	- - -	8.65 9.54 12.18	1.45 m 0.89 m 1.38 m	9.53 1.37 6.30
72524	13.69 17.27 18.54 23.32		13.91 18.54 20.31 23.92	0.22 m 1.27 m 1.77 m 0.60 m	2.95 1.45 9.39 1.20

-12b.7-

The 1985 drill program will be designed to follow the structure to greater depths and to test a magnetic anomaly on the west side of the creek which might represent an additional fold structure.

7.2 East Zone

Six (6) holes were drilled on the East Zone to test the mineralization which had been located by power stripping. The mineralized zone dips steeply to the north at about 75 to 80° and attains a width of about 4 metres. The zone is erratically mineralized and quartz veined. The better sections are associated with heavy quartz veining, arsenopyrite, pyrite and pyrrhotite but the mineralization occurs over much narrower widths than at the Shaft Zone. The best intersection was obtained from borehole 72524 (Section 104+70E) where a 1.77 m assayed 9.39 ppm gold. All sections showed good continuity on the southern edge.

No additional drilling is planned for this zone in 1985.

8.0 MINERALIZATION

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Mineralization is interpreted to be associated with a volcanopause between a lower, thick (200 m), coarse-grained basaltic flow (or sill) and an upper, thinner flow unit. The latter has a maximum thickness of about 10-15 metres as observed on section 105+25E. Pillows were not observed in the thick flow (sill?) but can be seen stratigraphically below (north) and above (south) this unit. The mineralized zone has been traced from 109+00E to 99+40E. a distance of almost 1 kilometre. On the East Zone the mineralized horizon varies in width from about 0.5 m to 4.0 m (figure 5) while maintaining a consistent east-west strike direction. At its narrowest parts the zone is marked only by a very strong foliation with very minor quartz veining and carbonate alteration. In these areas the zone can easily go unrecognized and only the continuous exposure provided by the power stripping allowed the zone to be traced. It is probable that the 1983 drilling program intersected similar narrow zones between 102+00E and 108+00E and that these were not significant enough to be identified in the drill core. In those areas in the East Zone where the mineralization/alteration attains its maximum width the zone is strongly foliated and is variably quartz veined with disseminations and stringers of arsenopyrite, pyrite and pyrrhotite. The quartz commonly occurs as veins or bands parallel to the contacts. The arsenopyrite and pyrite also occurs as narrow stringers or crystal trains within the quartz bands but more commonly are disseminated throughout these bands. The country rock within the zone is very strongly silicified, carbonatized and bleached. This can be observed on surface but is much better displayed in the drill core. On the East Zone the silicification and carbonatization can extend a few metres into the hangingwall but the contacts are commonly sharp on both footwall and hangingwall.

On the Shaft Zone (figure 6) the mineralization can be seen to be controlled by a drag fold which plunges west at about 35° to 40° . This structure apparently enhances both the width and grade of the mineralized zone which reaches widths of 15 m to 25 m with grades commonly between 8 and 10 ppm gold. In addition to the main (lower) zone in this area there are also a

- 7 -

number of "stacked" zones (BH Section 99+60E) lying above the main zone. This is particularly evident on section 99+60E where three (3) distinct mineralized units can be noted and on section 99+40E where two can be observed. Since the structure has not been traced to any significant vertical depth it is not certain whether the two zones will persist or coalesce.

- 8 -

The footwall contact in the Shaft Zone is sharp and alteration does not extend into the underlying basalt. In contrast the hangingwall unit(s) shows varying intensities of bleaching, carbonatization and silicification over about 10 to 20 metres. The highest gold values are associated with the most intense silicification and the heaviest arsenopyrite concentrations.

In both mineralized areas some argument can be made for a syngenetic exhalative origin for the mineralization since much of the quartz banding could be interpreted as interflow chert. However, the structural control of the mineralization in the Shaft Zone suggests the mineralization might be epigenetic and that replacement is taking place along the contact between two volcanic units.

9.0 MINERAL RESOURCE TONNAGE ESTIMATE

A mineral resource of 17460 tonnes at 10.09 ppm Au is estimated for the Shaft Zone; this is made up as indicated below.

Section		Tonnes	<u>Grade</u> (ppm Au)	Tonnes x Grade
100+00E		840	7.538	6331.92
99+80E		2940	10.974	32263.56
99+60E	(Lower Zone)	7800	9.207	71814.60
	(Middle Zone)	1275	7.580	9664.50
	(Upper Zone)	555	13.066	7251.63
99+40E	(Lower Zone)	1665	9.787	16295.35
	(Upper Zone)	2385	13.651	32557.63
Total		17460 to	nnes	176179.19
		i.e.: 17	460 tonnes @ 10.09 ppm gold	

10.0 CONCLUSIONS

The 1984 exploration program succeeded in tracing the mineralization over a 1 km strike length. The best values were located in the Shaft Zone area but these values appear to decrease as the mineralization is traced eastwards. In the overburden trenches on lines 108+50E and 109+00E the best assays recorded were 600 ppb Au and 25 ppb Au respectively compared to 8 to 10 ppm Au over significant lengths in the Shaft Zone. The humus survey which was carried along strike to the east and west of the mineralized areas did not locate any significantly anomalous zones.

The drill program in the Shaft Zone was laid out following the discovery that the mineralization in this area was controlled by a westerly plunging drag fold. Drilling on 20 m sections traced the structure to section 99+40E and to a vertical depth of about 40 metres. The current tonnage estimate of the mineral resource between sections 100+00E and 99+30E is 17460 tonnes at a grade of 10.09 g/t gold.

11.0 RECOMMENDATIONS

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It is recommended that the mineralized structure be traced downplunge on 20 to 40 m sections to determine if the zone expands with depth. Additional magnetic coverage is also recommended for the area immediately west of the creek near the Shaft Zone to determine if the zone is folded or offset by faulting along the creek.

3.2.2 Esther Township (cont.)

In 1987, the property was optioned to Grandad Resources Ltd., who completed a 14 hole surface diamond drilling program totalling 3,117ft. that same year. In August, 1987, Grandad Resources announced the results of one diamond drill hole which cut 28.4ft. of mineralization grading 0.23 oz/ton gold. (Northern Miner Press, 1987:pp.9). An additional 5 drill holes, drilled to test the southeast extension of the mineralized zone, have been filed for assessment on the unpatented portion of the claim group. Hole 87-2, drilled approximately 2000ft. east of the Shaft zone, cut 0.7ft. averaging 0.133 oz/ton gold in sheared chloritic meta-gabbro. The other 4 holes returned only anomalous values up to 0.02 oz/ton gold. Late in 1987, Grandad began a second diamond drill program. No information is available on the results of this program. (Ref.: Timmins Resident Geologist Assessment File, T-1920, Northern Miner Press, August 17, 1987, pp.9).

3.2.3 Garnet Township

Property I - Lacana Mining Corporation (1982-present)

The property was staked in 1982 to cover a number of airborne electromagnetic INPUT anomalies indicated on map 80-547 of the Ontario Geological Survey's Swayze area Airborne Survey, performed by Questor Surveys Limited and released in 1982.

The property was mapped in 1982 and a major east-west trending zone of sheared and carbonated mafic metavolcanics, variably mineralized with pyrite, was outlined south of Fawn Creek. Dominant rock types observed were pillowed flow rocks and mafic tuffs with minor felsic crystal tuff and gabbroic intrusives.

In 1983, Lacana put two diamond drill holes down to test an E.M. anomaly adjacent to a 250ft. wide 0.2 mgal. gravity anomaly. Hole SW-83-1 was collared in mafic metavolcanics and drilled N20 E at -55 to a depth of 650ft. Hole SW-83-2 was collared approximately 550ft. north of the first hole and drilled S20 W at -55° for 395ft.

Hole SW-83-1 was drilled down dip within variably carbonated massive to foliated and sheared mafic metavolcanics. Multiple quartzcarbonate <u>+</u> pyrite zones were reported in the log. Sludge samples representing ll5ft. of drilled core between 70 and l87ft., returned only trace gold values, and a total of 5.8ft. of drill core collected in six samples between 212 and 631ft. returned two 1 foot sections assaying 0.002 oz/ton gold. No other assays were reported. A total of 187.6ft. of this core is stored at the Ministry of Northern Development and Mines Drill Core Storage Library in Timmins.

3.2.3 Garnet Township (cont.)

Hole SW-83-2 was collared in feldspar crystal tuffs described as finely bedded and moderately carbonated with local pyrite-pyrrhotite disseminations to 5 percent. A graphitic, conductive argillite containing 5 percent pyrrhotite and pyrite near the lower contact of the felsic tuffs explained the conductor. Twenty feet below the conductor, the hole entered the mafic metavolcanics encountered in hole SW-83-1. A total of 13 core samples representing 47 feet of drill core were reported. Best assay was 0.004 oz/ton over 5.0ft. collected from the conductive argillites.

Both holes were drilled north of the major carbonated pyritic shear zone mapped by Lacana in 1982. No work has been recorded on the property since 1983 and the six claims covering the main shear zone are in good standing. (Ref.: Resident Geologist Assessment Files T-2561, T-2564, Timmins)

Property J - Dome Exploration (Canada) Limited (1970-1971)

In 1971, Dome completed one diamond drill hole on their 12 claim property in southeast Garnet Township. Hole 27-6-1 was collared south of a ground electromagnetic and magnetic anomaly and drilled N14[°]E at -55° for 353 feet. The hole collared in siliceous pyrite-pyrrhotite iron formation. Specks of chalcopyrite were reported within 5-10 percent iron sulphides. Intermediate volcanics and graphitic sediments were encountered down hole. A 21 foot wide zone of graphitic argillites explained the conductor (Ref.: Resident Geologist Assessment File T-2081, Timmins).

Property K - Canadian Nickel Co. Ltd. (1965,-66,-68)

During the period 1965-68, Canico reported 11 diamond drill holes completed on five claim groups in Garnet Township. Four holes were drilled in southwest Garnet Township and do not concern this report. Only brief, non-descriptive drill log summaries are available for compilation. Holes pertinent to this report are summarized below.

3.2.3 Garnet Township (cont.)

Hole Number	Length	Property Designation	Description
31911	453ft.	Ka.	(1966) description includes intermediate flows, "diopsidic skarn", graphitic shear zone. This hole was drilled within 1300ft. of a gold showing discovered in 1986 by Western Pacific Energy Corp., who currently hold the ground. No assays reported by Canico.
31912	437ft.	Ka.	(1966) rock types include basalt, 3 graphitic shear zones, greywacke and sheared and altered greenstone. No assays.
31913	437ft.	Ka.	(1966) greenstones, flows, breccias, sheared greenstones, graphitic shear zone, carbonate-graphite shear zone. No assays.
31914	433ft.	Kb.	(1966) collared in iron formation, intersected hematite, magnetite, goethite jasper, chert throughout.
31915	507ft.	Kb.	(1966) greenstone, intermediate tuff, graphite schist, quartzite, argillite and bottomed in iron formation.
31961	395ft.	Kc.	(1968) collared in dacitic tuffs, argillite, graphitic argillite, intermediate tuffs, andesitic flows.
31963	404ft.	Kd.	(1968) encountered a thick sequence of intermediate and basic lavas with argillitic interflow sediments.

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3.2.3 Garnet Township (cont.)

Property L - Western Pacific Energy Corp. (1984-present)

A preliminary examination of the Western Pacific Energy property by L.D.S. Winter in 1984, outlined seven areas of potential economic interest for gold mineralization. Based upon Winter's recommendations, an airborne geophysical survey (V.L.F.-E.M. and Magnetometer) was flown by Terraquest Ltd. on behalf of Western Pacific Energy Corp. In 1985, grids were cut on the west and east portions of the property and ground magnetometer, V.L.F.-E.M. and Self Potential surveys were carried out over portions of the two grids.

During the winter of 1985-86, a 13 hole, 5,630ft. diamond drill program was completed by Western Pacific Energy Corp. Assayed drill core indicated no economic grades of gold mineralization were intersected. One hole, G-85-7, drilled to test a V.L.F.-E.M. conductor, cut 8ft. of carbonatized, silicified and fractured felsic tuffs mineralized with pyrite and arsenopyrite. A one foot section returned 930 parts per billion gold.

A discovery of gold in iron formation was made on the west side of the newly re-constructed Dore Forest access road, approximately 1500ft. north of the Wakami River bridge. Gold values up to 0.14 oz/ton were obtained from a narrow, inch pyritic quartz vein trending N10°E across magnetite banded iron formation trending approximately 290°. A cross-fault structure is thought to cut the iron formation close to the area sampled.

Recommendations made at the conclusion of the geological survey included additional stripping on the gold showing located north of the Wakami River bridge and establishment of a grid to cover the extensions of the iron formation hosting the gold showing. Future exploration should focus on areas where cross structures intersect with favourable stratigraphy such as iron formation or graphitic horizons, especially where structure trends sub-parallel or parallel to stratigraphy. Limbs of folds and fold noses are areas where large areas of mineralization could be expected.



4.0 GEOLOGY

4.1 Regional Geology

The Benton Township property is situated in the south-central section of the Swayze Greenstone Belt (Figure 1), which extends for over 100km. from Chester Township near Gogama, northwestward to Halcrow Township, abutting the Ivanhoe Front of the Kapuskasing Structural Zone. Through Esther, Mallard, Benton, Garnet and Cunningham Townships, metamorphased flows of magnesium-rich and iron-rich tholeiitic basalt are the dominant rock types. The central section of the belt includes tholeiitic and calcalkaline flows, intermediate pyroclastic metavolcanics, interflow sediments, clastic sedimentary sequences, transitional mafic to felsic tuffs, graphitic horizons and iron formation. Recent mapping indicates the presence of at least two northwest trending synformal axes within the sequence, which is believed to represent a major synclinorium, the axis of which is defined by the distinct band of iron formations and clastic metasediments which extend through central Benton Township into northeast Garnet Township. Peridotitic, gabbroic and dioritic intrusive sills and stocks are commonly found spatially associated with the mafic metavolcanics. A few small, granitoid plutons intrude the statigraphic rocks and numerous small dioritic to rhyolitic porphyritic intrusives are found in or near carbonate-altered shear zones. North to northwest trending diabase dikes, northeast trending olivine diabase dikes and northeast to northwest trending lamprophyre dikes intrude all other rock types in the area. Rocks peripheral to the greenstone belt include migmatic granite gneiss, Algoman-aged porphyritic granite plutons and older basement granites.

Metamorphism seldom exceeds greenschist facies, but higher grade metamorphic aureoles have been observed adjacent to granitoid plutons.

Regional foliation trends west-northwest and dips vertically to

4.1 Regional Geology (cont.)

sub-vertically. Locally, secondary foliations develop in fold noses and low-angle shears, which are abundant in Garnet, Benton and Esther Townships. Low-angle faults and shear zones tend to parallel stratigraphy and cut the regional foliation at a low angle. Some minor east-northeast ductile shear zones have been noted, but documentation is poor. High angle cross faults are the most obvious structural feature in the area. Dominant trends are $150^{\circ}-170^{\circ}$ and $210^{\circ}-230^{\circ}$ as indicated in observed offsets and airphoto lineaments. The $150^{\circ}-170^{\circ}$ trend is dominant.

4.2 Property Geology

The Benton Township property is underlain by a northwestsoutheast trending, steeply dipping sequence of matavolcanic and metasedimentary rocks. Rocks at the west end of the property consist of variably carbonated, foliated to massive mafic tholeiitic metavolcanics. Intercalated sediments and felsic, brecciated and sheared felsic metavolcanics outcrop sporadically in the central part of the property. Diamond drilling indicates the presence of multiple graphitic horizons associated with iron formation cutting through the central part of the property, where outcrops are scarce.

The east end of the property is underlain by sheared, moderately to extensively carbonated (1.5% to 4.65% CO_2), massive, foliated and sheared volcanic rocks. The southeast part of the property, along the Woman River, is dominated by mafic tholeiitic to calc-alkalic basalts. The northeast part of the property is dominated by intermediate and felsic, sheared, schistose rocks that exhibit moderate carbonatization. Small gabbro-diorite plugs outcrop at the southeast corner, the southwest corner and just south of the south boundary of the central part of the property. A serpentinized peridotite body is drill-indicated at the north boundary of the central portion of the claim group. The peridotite is bisected by a sequence of felsic tuffs hosting graphitic argillite, suggesting the peridotite may be komatiltic flows or tuffs.

4.2 Property Geology (cont.)

A study of whole rock analysis data from G. Siragusa, Ontario Geological Survey Report 248 - Geology of the Garnet Lake Area -, provided the information on carbonate alteration in the Benton Township area, including the Benton Property. There is also a recognizable pattern of soda (Na) depletion evident in the data. There is a definite zone of Nadepletion on the southwest boundary of the claim block which extends southward off the property. Significantly, three contiguous samples taken north to south show a gradual increase in Na content to the north, ranging from 0.01% to 0.77% Na₂O. The same three samples have elevated CO_2 contents ranging from 1.46% to 4.55% CO_2 . A single sample taken from the southeast corner of the property, near the Woman River, exhibits Na-depletion (0.01% Na₂O) and CO_2 enrichment (3.86% CO_2).

5.0 Economic Potential

The Benton Property is situated on a major, regionally extensive structural zone that has been traced northwest from Benneweis Township to southwest Dore Township and beyond.

At the east end of the regional structure, Chesbar Resources Inc. and Murgold Resources Inc. are joint venture partners in a gold property situated in Chester Township. Chesbar recently announced a reserve estimate of 423,546 tons grading 0.223 oz/ton gold. Surface and underground work is continuing on the quartz-pyrite-chalcopyrite vein stystems, which trend northwest in diorites and granodiorite.

The Jerome Mine in Osway Township, located 16 miles to the northwest, along trend, of the Chesbar/Murgold property, is currently being de-watered in preparation for a major underground exploration program. Between 1941 and 1943, the Jerome mine produced 56,878 ounces of gold and 15,105 ounces of silver from 335,000 tons of ore for a recovered grade of 0.174 oz/ton gold. The mill shut down in 1943 due to manpower shortages. Underground development continued until 1945 when the mine closed. A vertical, 3compartment shaft to 1138ft. and 6 levels to 1100ft. were completed up to that time. The Main Zone was developed to the 4th level at 650' and remains open to the east and at depth. Proven reserves from the developed sections of the Main Zone, which were estimated in a 1985 feasibility study by Muscocho Explorations, stand at 311,000 tons averaging 0.201 oz/ton gold. This figure represents less than half of the known 4000 feet strike length of the Main Zone.

The South Zone, which has a present strike length of 3000 feet, has never been developed, despite several gold intersections in previous drilling.

-20-

5.0 Economic Potential (cont.)

Muscocho is currently drilling the South Zone from surface at 100 and 200ft. centers, testing to a vertical depth of 500 feet. The second hole in the current program intersected 4.8 feet of 1.07 oz/ton gold in the South Zone. The hole continued and intersected two gold-horizons in the Main Zone, which is located about 400 feet further north. The two sections averaged 0.12 oz/ton gold over 6.0 feet and 0.145 oz/ton gold over 6.0 feet. The two zones are 7.0 feet apart, downhole. Muscocho allowed the hole to continue and, about 65 feet stratigraphically north of the Main Zone, a 6.0 foot intersection averaging 0.117 oz/ton gold was encountered. Muscocho believes this lower intersection represents a new "North Zone" not previously encountered in drilling

Muscocho and partners McNellen Resources Inc. and Jerome Gold Mines Corp. expect to spend \$6 million on the property by September, 1988.

Six miles northwest of the Jerome Mine, in northeast Esther Township, Grandad Resources Ltd. is evaluating the Burton Option property (see section on Previous Work, Property C).

In northeast Cunningham Township, Ingamar Explorations currently holds the old Olive Gold Mines prospect on Allen Lake.

Numerous small, poorly documented gold occurrences are scattered along the major structural zone that passes through the Benton Property.

Exploration to date in the Canadian Shield has shown that gold can occur in a wide variety of geological environments. The study of many deposits and occurrences of gold over time has established a rather broad set of criteria that are useful in defining exploration target areas for gold. These criteria were summarized by A.C. Colvine of the Ontario Geological Survey (1983). They include:

5.0 Economic Potential (cont.)

- 1. common occurrence of quartz-carbonate (ankerite) vein systems and an almost ubiquitous association with pyrite;
- 2. occurrence with mafic volcanic rocks, usually of greenschist or lower amphibolite grade;
- 3. common spatial association with
 - -alteration zones (predominately carbonatization and silicification)
 - -chemical sedimentary rocks
 - -felsic intrusions
 - -regional transitions between volcanic and clastic sedimentary sequences (Major lithofacies changes) -komatiites
- 4. common association with tellurides, arsenopyrite, tourmaline, scheelite and molybdenite;
- 5. local structural control on the final siting of gold concentrations and apparent concentration of deposits along major deformation zones.

Colvine stressed the necessity of systematically defining the role and relative importance of each criterion in the gold forming environment.

The data available on the Benton Township property fits the criteria as summarized, making it a favorable target for evaluation of its gold potential. Furthermore, the property has excellent potential for polymetallic stratabound massive sulphides.

6.0 PROPOSED EXPLORATION PROGRAM

Prior to the commencement of an exploration program, it is recommended that additional staking be done to incorporate into the property several areas of significance (Figure 3).

<u>Priority One</u> - From the south boundary of the west end of the existing block at the Garnet-Benton Townships boundary : add at least two and possibly three claims south and extend east to the existing property boundary for total of between 10 and 18 claims.

<u>Priority One</u> - extend the north boundary northward one claim, from the Garnet Township boundary eastward, to claim P.1058842 for a total of ll additional claims.

<u>Priority Two</u> - Extend the west boundary of the existing claim block westward 3 claims for a total of 15 additional claims.

Priority Two - Extend the west boundary of the east part of the claim block, at the Woman River, westward one claim, for a total of 3 additional claims.

A minimum 39 additional claims are recommended for incorporation into the Benton Township property.

Outcrop exposures are plentiful in the west and east portions of the property. The central portion is dominated by low, swampy terrain, but air photo examination indicates numerous areas and "islands" of higher relief that may indicate the presence of outcrop. Because of the wide variation in local topography, the proposed exploration program will depend heavily on detailed geophysical surveys augmented by detailed geological mapping, exhaustive lithogeochemical sampling and selctive whole rock geochemistry, all designed to outline optimum target areas for gold and polymetallic massive sulphide mineralization.

6.0 PROPOSED EXPLORATION PROGRAM (cont.)

The initial phase of the proposed exploration program is as follows: (N.B. Numerical and dollar figures are based on the original 68 claim block only and do not include the recommended additional claims.)

PHASE I

1.	Linecutting, including all base lines and cross-lines at 400 foot spacing. 72 line-miles at \$275. per mile	\$ 19.800.
2.	Ground Proton Magnetometer survey 72 line-miles at \$150. per mile	10,888.
3.	Ground V.L.FE.M. survey 68 line miles at \$150. per mile	10,200.
4.	Detailed geological survey	15,000.
5.	Sampling and assay costs	5,000.
6.	Supervision, compilation of results, maps reports and assessment submissions	6,000.
7.	Logistics, vehicle expense, camps, equipment, etc.	3,500.
8.	Contingency 10%	7,030.
	TOTAL PHASE I	\$ 77,330.

Certificate of Qualifications

- I, James Carson Ireland do hereby certify;
 - 1. That I am a Geologist and reside at 466 Center Street, Timmins, Ontario. P4N 7V5
 - 2. That I graduated from Laurentian University in Sudbury, Ontario with a four year B.Sc. in Geology in 1981.
 - 3. That I have practiced my profession since 1981 and have been involved with geology since 1978.
 - 4. That the report on the Benton Township Property is based upon my knowledge of the area and on a review of published information and accessible data on file with the Ministry of Northern Development and Mines, Timmins.
 - 5. That I have no personal, direct or indirect interest in the Benton Township Property, Benton Township, District of Sudbury, Ontario, or any adjacent properties, nor do I intend to in the future.
 - 6. That, during the period March 25, 1988 to April 18, 1988, I have written this report as an independent Geologist.

Dated in Timmins, Ontario, this 17th day of April, 1988.

James C. Ireland, B.Sc. Geologist.

SELECTED REFERENCES:

Boyle, R.W. (1979)	-The geochemistry of Gold and its Deposits Geol. Surv. Can. Bulletin 280. 584p.
Meen, V.B. (1944)	-Geology of the Cunningham-Garnet Area, Sudbury District, Ontario., Ontario Department of Mines, Ann. Report, Vol.51 Pt.7
Durocher, M.E. (1983)	-The Nature of Hydrothermal Alteration Associated with the Madsen and Starret- Olsen Gold Deposits, Red Lake Area. in The Geology of Gold in Ontario, Ont. Geol. Survey Misc. Paper 110, edited by A.C. Colvine. 278p.
Pirie, J. (1981)	-Regional Geological Setting of Gold Deposits in the Red Lake Area, Northwestern Ontario., in Genesis of Archean Volcanic Hosted Gold Deposits, Symposium Held at the University of Waterloo, March 7, 1980, Ontario-Geological Survey, Misc. Paper 97, 175p.
Siragusa, G.M. (1987)	-Geology of the Garnet Lake Area, District of Sudbury, Ontario Geological Survey Report 248, 81p. Accompanied by Maps 2503 and 2504, scale 1:31,680.

Assessment Files, Resident Geologist Office, Timmins, Ontario.





Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Mining Lands Section 880 Bay Street, 3rd Floor Toronto, Ontario M5S 128

Tel: (416) 965-4888

Your File: W9006.60284/60285 Our File: 2.13152

June 19, 1990

Mining Recorder Ministry of Northern Development & Mines 60 Wilson Avenue TIMMINS, Ontario P4N 2S7

Dear Sir:

Notice of Intent dated May 17, 1990 for a Geological Survey Re: submitted on Mining Claims P 1058883 et al in the Benton/Garnet Townships.

The assessment work credits, as listed with the above mentioned Notice of Intent, have been approved as of the above date.

Notice of Intent, have were the Please inform the recorded holder of these mining claims and so ONTARIO GEOLOGICAL SURVEY ASSESSMENT FURNEY

Yours sincerely,

pr W. R. Cowan U

Provincial Manager, Mining Lands Mines & Minerals Division RIS LJS: ZM Encl:

ASSESSMENT FILES CF JUN 20 1990 RECEIVED

Mr. W. D. Tieman cc: Mining & Lands Commissioner Toronto, Ontario

> Central Crude Limited TORONTO, Ontario

J. C. Carson TIMMINS, Ontario Resident Geologist TIMMINS, Ontario

Dominion Explorers Inc TORONTO, Ontario

900



Ministry of Northern Development and Mines

Technical Assessment Work Credits

Date 2.13152 May 17, 1990 Work Ne9006.60284/

60285

File

Recorded Holder			
	CENTRAL	CRUDE	LIMITED
Township or Area			

BENTON AND GARNET TOWNSHIP

Type of survey and number of	Mining Cleims Assessed
Geophysical	
Electromagnetic day	P 1058844 to 858 incl
	1058860 to 863 incl
Magnetometerday	1058877 to 884 incl
	1058897
Radiometric day	10/5072 7/
	1045975 - 74
Induced polarization day	1045989 = 90
	1043993 to 995 incl.
Otherdays	
Section 77 (19) See "Mining Claims Assessed" column	
Geologicaldays	
· · · · · · · · · · · · · · · · · · ·	
Geochemicaldays	
Man days 🗍 Airborne 🗌	
Special provision	
coverage of claime.	
Credits have been reduced because of corrections	
to work dates and figures of applicant.	
•	
•	
cial credits under section 77 (16) for the following	mining claims
0 Days Credit Geology: P 10588	59 · 10/5088 · 10/5001 02
	<i>J</i> , 104J908; 104J991-92;
0 Days Credit Geology: P 105883	37 to 843 incl; 1058864 to 876 incl.;
105888	36 to 896 incl.; 1058898 to 1058904 incl.;
104595	0 to 967 incl.: 1045971 - 72: 1045975 to 978 incl.
104598	2 to 987 incl.: 1046010: 1046029 to 041 incl
credits have been allowed for the following mining	claims
not sufficiently covered by the survey	insufficient technical data filed
— • • • •	-
5 Days Credit Geology: P 105888	5
104596	8 to 970 incl.
.104601	1

The Mining Recorder may reduce the above credits il necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geologocal - 40; Geochemical - 40; Section 77(19) - 60.

	linistry of	Beport of W	ork	I NOCUI	VIENT NO.	tructions: -	Please typ	be or print.	
	orthern Developme	int (Geophysical J	Geological	W 9	006•602	844 -	If numbe	r of mining claim	ns traversed attach a list.
Ontario	nd whites	Geochemical a	nd Expendi	itures)	6028	Note:	Only day	ys credits calculat	ted in the
\sim				Mining	Act	• 	in the "	Expend, Days Cr.	" columns.
Type - Sur	vey(s)					Township	or Area]
Geolog	ical		<u> </u>	3/5	2	Bent	on/Gari	net Township	>
Centra	l Crude Lim	ited	•				Prospecto	r 1361	
Address					·	· <u>-</u>			
Suite	301, 55 Yong	ge Street, Toro	onto, On	tario, M	E 1J4				
Survey Com	pany	PILM TN F	- ω ^α	ad. 60284			04 88	63.365 km	n l
Name and A	ddress of Author (b	Geo-Technical report)		ahd	4 01 05	89 31	05 89		
J.C. C	arson, 466	Center Street,	Timmins	, Ontario	1 Wgood	. 6028	5	/	
Special Prov	isions		Days per	Mining Cla	ins Traversed (I	List in nume	rical sequ	ence) Aining Claim	Expend.
Eor first		Geophysical	Claim	Prefix	Number	Days Cr.	Prefix	Number	Days Cr.
Enter	40 days. (This	- Electromagnetic		Р	1058883		Р	1045951	
includ	les line cutting)	- Magnetometer			1058884			1045952	
For each	additional survey:	- Radiometric			1058885			1045953	
using the	same grid: 20 days (for each)	- Other			1058886			1045954 .	
Linter	20 days (itor each)	Geological	40		1058887	·		1045955	
		Geochemical			1058888		1 Cartes	1045555	-
Man Days	<u></u>		Days per		1050000		252	1045956	
Complete	e reverse side	Geophysical	Claim		1058889		A Strain	1045957 ·	-
and enter	total(s) here	Electromagnetic		-	1058890			1045958	
	POHCUPINE N	ING I Arbightometer		15.	1058891			1045959 ·	
	WELLE	1 Vrichanduie			1058892			1045960	
	I I U	- Other			1058893 R	ECEI	19 30	1045961 '	
	MAR 21	1990 Gronogical			1058894	[]		1045962	
		Geochemical			1050005 A	PR 27	1990 s	1045502	
Airborne Cri	edits	Geochemical	Days per	-	1028892		11.	1045963	
			Claim	- 18 -	1058896 MININ	g lan ds	SEE	ON ⁰⁴⁵⁹⁶⁴	- [
Note: Sp	ecial provisions	Electromagnetic			1058897			1045965 ·	
to	Airborne Surveys.	Magnetometer		1.4.4	1058898 、			1045966	
	R	PANDORD			1058899		271-1-	1045967 .	
Expenditur	es (excluiles powe	er stripping)		27.4	1058900		n en e	1045968	
Type of Wor	k Performed				1058001	<u> </u>		1045969	
Performed or	n Claim(s	A R 2 8 1990; -			1050000		10.00	1045909	-
				-133-	1058902		- XX _ I	1045970	
	1			100	1058903		5.451	1045971	
Calculation o	of Expenditure Days	Credits			1058904			1045972	
Total Exp	penditures	Days	otal Credits	4 35.2 M ▲	1045950			1045973 '	
\$		+ 15 =					Contin	Jed nber of mining	100
Instructions							claims co report of	vered by this Mork.	126
Total Day choice, Er	s Credits may be ap nter number of days	portioned at the claim h credits per claim selecte	older's	F	or Office Use O	nly) (1, D-1-	
in column	as at right.			Total Days C Recorded	r. Date Recorded	~/~	Mining Re	or Onele	
	I I Bac	orded Holder or Agent (S	Signatural	0 lm	MARCH	B Corded	Mini	ng Recorder_	
W/a	rch /go	2. L. Claine	ng	501-	500 -	Vice	1.1.01	Kohnten	ent
Certification	n Verifying Repo	rt of Work	g `						
I hereby c	ertify that I have a sed same during and	personal and intimate kr	iowledge of t	he facts set for xed report is tri	th in the Report o	of Work annex	ed hereto,	having performed th	he work
Name and Po	stal Address of Pers	on Certifying						·····	
M.K. K	earney, c/o	Dominion Explo	orers In	c., Suite	916, 111	Richmond	Street	: West,	
Toront	o, Ontario,	M5H 2G4	_		Date Cortified	chth	Certified I	(Signiture)	,
1362 (85/12)							-74)-4	7
					v	4			

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Benton/Garnet Townships

Central Crude Limited T 1361

Page 2

Mining C	Claims Traversed (List in nur	nerical sequ	ence)	
Prefix	Vining Claim	Expend. Davs Cr.	Prefux	Number	Days Ci
P	1058837		P	1058860	1
	1058838			1058861	1
	1058839			1058862	
	1058840		and the second	1058863 -	
	1058841		and the second second	1058864	
	1058842		N	1058865.	
	1058843			1058866 /	
	1058844		and the second	1058867 '	
77	1058845			1058868 ·	
545 F.	1058846		منعصب	1058869	
	1058847			1058870	
	1058848			1058871	
	1058849 ·			1058872 •	
	1058850			1058873	
	1058851 [.]			1058874	
	1058852			1058875	
	1058853			1058876	
	1058854			1058877	
	1058855 -			1058878	
	1058856			1058879	
	1058857 '			1058880	
5	1058858			1058881	
	1058859		1.275	1058882	

Total number of mining claims covered by this report of work.

126

13

2.13152

Benton/Garnet Township

Mining Claims Traversed (List in numerical sequence) Mining Claim Expand. Mining Expend. Days Cr. Number Prefix Ρ

	N	lining Claim	Expend.
	Prefix	Number	Days Cr.
	Р	1046031	
		1046032	
		1046033	
ļ	5.7	1046034	
		1046035	
		1046036	
		1046037	
		1046038	
		1046039	
		1046040	
		1046041	
	500		
ļ			
ļ	\$		

Total number of mining claims covered by this report of work.



SUITE 916 111 RICHMOND STREET WEST TORONTO, ONTARIO M5H 2G4 TELEPHONE (416) 364-3182 TELECOPIER (416) 364-5265

DOMINION EXPLORERS INC. NOBLE MINES & OILS LTD.

February 23, 1990

2.13152

Mr. L. Stoliker Assessor Ministry of Northern Development and Mines Mining Lands Section 3rd Floor 880 Bay Street Toronto, Ontario M5S 128

RECEIVED

MAR 05 1990

Dear Larry

MINING LANDS SECTION

RE: WOMAN RIVER PROPERTY GARNET/BENTON TOWNSHIP, SWAYZE AREA, ONTARIO NTS 4L0/9

Under "Special Provision", 40 days geological assessment is filed for credit by Dominion Explorers Inc. on behalf of Central Crude Limited and Noront Resources Ltd.

In duplicate, a geological map of the property along with the "Preliminary Evaluation of the Economic Potential Report" is enclosed. This map is derived from prospecting that has been done and property visitation notes as well as the aforementioned report.

Please contact me should you have any questions regarding further information about this property.

Best regards,

Yours very truly

DOMINION EXPLORERS INC.

Wang R. Kearner

Mary K. Kearney

MKK:nj Encls.



NOTES

400' surface rights reservation along the shores of all lakes and rivers

FOI SILED OWLY APPLICATION (Sile 839742)

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OTHER ROADS	
TRAILS	Walkely and the block gave aren's long data with
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UNSURVEYED LINES	
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PARCEL BOUNDARY	
MINING CLAIMS ETC	unan haras kinda saray un in akan dapa anga d ara
RAILWAY AND RIGHT OF WAY	· · · · · · · · · · · · · · · · · · ·
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