GM 44071

TILL GEOCHEMICAL SURVEY, OPAWICA RIVER PROJECT

ESSO MINERALS CANADA

OPAWICA RIVER PROJECT:

TILL GEOCHEMICAL SURVEY

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INTRODUCTION

Location And Access

The Opawica River project is located 55 km southwest of Chibougamau, Québec and is centered at latitude 49° 30'N and longitude 74° 45'W (Figure 1). The Opawica River property comprises 53 contiguous claims covering an area of 848 ha in Hazeur and Rasles Townships.

Access is provided by forestry roads. A main all-weather gravel road (Rte-209) departs Highway 113 between Chapais and Chibougamau. Secondary roads branch from the main gravel road north and south of the Opawica River bridge.

History

Semi-detailed geological mapping in the Opawica River area was carried out by Deland (1955) and Remick (1956, 1957). The area was covered in a regional reconnaissance geological survey carried out by Gobeil and Racicot (1982). Quaternary geological studies in the Chapais-Chibougamau area include those by Mawdsley (1936), Norman (1938), Ermengen (1957) and Prichonnet et al., (1984).

Mineral exploration in the area has been sporadic since the late 1940's. Gold exploration peaked in the late 1940's and 1950's. During the 1960's and 1970's base metals were the focus of exploration activities. A renewed search for gold commenced in the early 1980's. Significant previous exploration is summarized below.

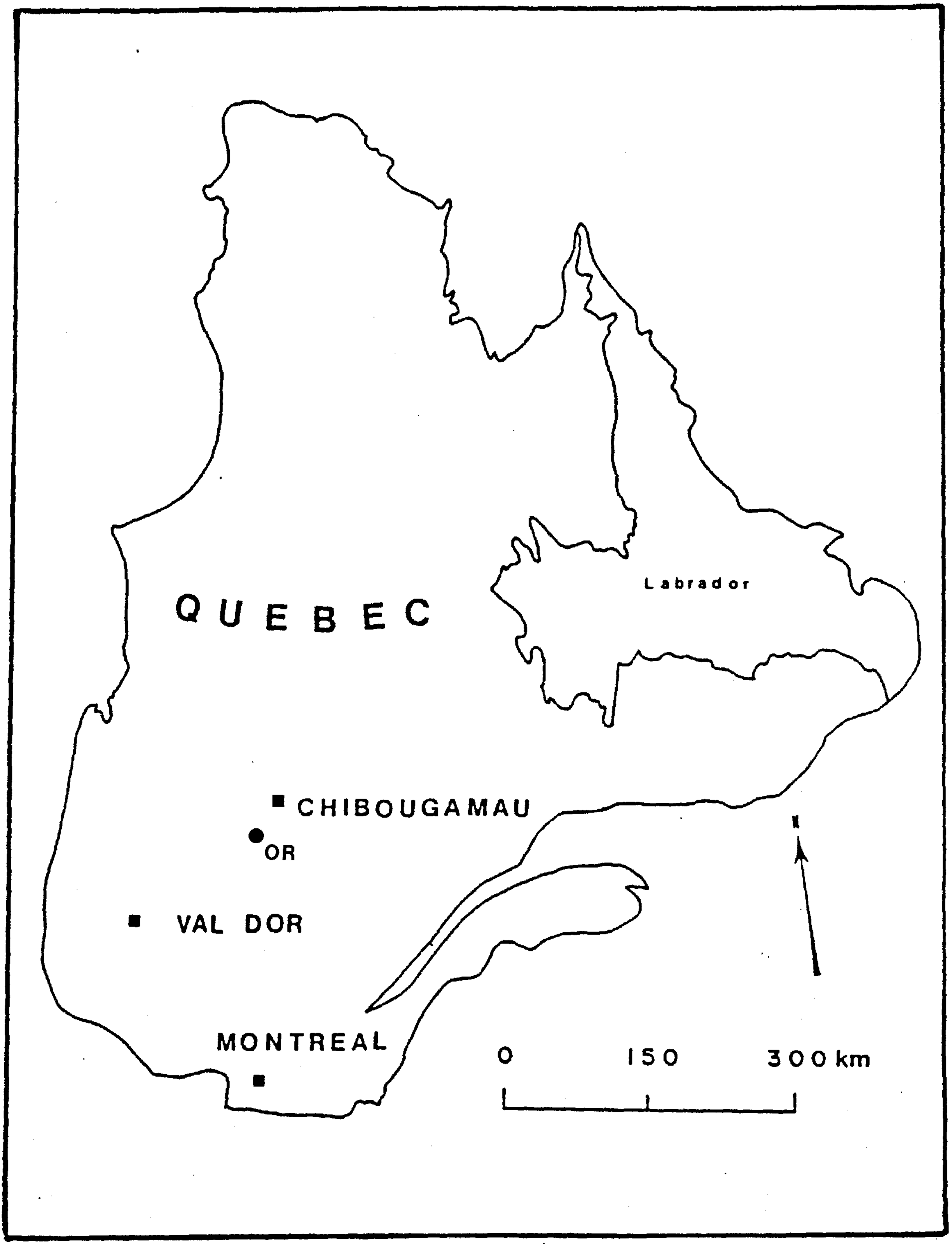

Figure 1: Location of the Opawica River Project in the Province of Québec.

In 1954, Riverside Chibougamau Mines carried out a 5 hole diamond drill program on the western part of the property. Esso Resources Canada Limited acquired 21 of the 53 claims by staking in August, 1981. An additional 32 claims were optioned from P. Smith and H. Parceaud in September, 1986. In 1982, EMC conducted Magnetometer and Max-Min Surveys and diamond drilling on the western part of the property. In 1986 EMC carried out a reverse circulation drill program on the 53 claim group.

REGIONAL GEOLOGY

The Opawica River property is located in the eastern part of the Abitibi greenstone belt. The main features of the Abitibi greenstone belt are summarized in Figure 2.

The Abitibi belt is approximately 700 km in length, and 200 km in width. It is the largest greenstone belt in the Superior Province. On the east it is bounded by the younger (950 MY) Grenville Province (Figure 2). The boundary between the two provinces is a major tectonic zone called the Grenville Front. It separates the low-grade metavolcanic rocks of the Superior Province from the high-grade gneisses of the Grenville Province (Allard et al., 1972). Allard (1976, 1978, 1981) has demonstrated that the rocks of the Abitibi belt in the Chibougamau District extend to Grenville Province. On the west, the Abitibi belt is bounded by the Kapuskasing structural zone (Figure 2). This zone is an elongate NE trending structurally discordant region of high-grade gneisses which is Proterozoic in age. To the north and south, the belt is bounded by high-grade gneisses which may represent older basement terrane (Dallmeyer, 1974; Racicot et al., 1984).

The Abitibi belt consists of a thick sequence of volcanic and sedimentary rocks which have been isoclinally folded into large scale anticlinoria and synclinoria, metamorphosed, and intruded by several large granitic batholiths.

Regional stratigraphic successions within the belt can be considered in terms of a large basin, with marginal (proximal) and interior (distal) facies (Goodwin, 1977). The marginal parts of the belt are characterized by large volcanic centres. The centres are composed of several shield-type volcanoes (Goodwin,

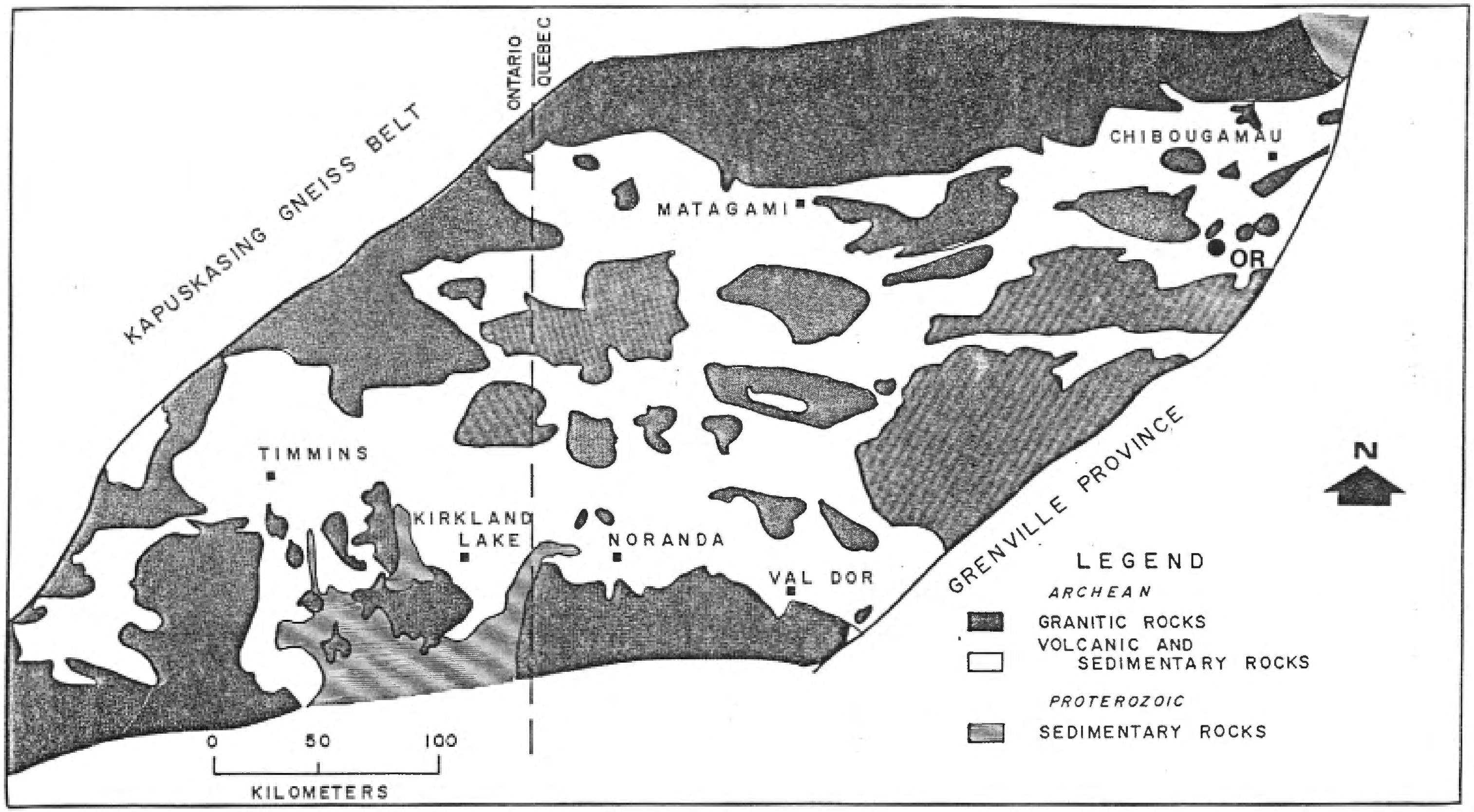

Figure 2: Generalized Geology of the Abitibi Greenstone Belt (after Goodwin and Riddler, 1970; and Allard, 1976).

1977) comprised of lower dominantly tholeiitic parts, and upper calc-alkalic parts (Goodwin, 1972, 1977). The change in lithology from mafic to felsic is not abrupt, but takes place over a stratigraphic range of varying thickness by interlayering of flows of different compositions. Generally more than one mafic to felsic cycle makes up a succession (Ridler, 1970; Baragar, 1971; Allard et al., 1972; Goodwin, 1972,1977), and the entire succession is generally conformable.

Mafic portions of the volcanic sequences are dominated by massive and pillowed flows which show evidence of having been deposited in a submarine environment. Mafic sills with compositions similar to their host rocks are generally abundant in the mafic part of the sequences (Baragar, 1971). In several volcanic centres large layered ultramafic to mafic complexes are present in the tholeiitic parts of the sequences. The calc-alkalic parts of the successions are composed mainly of intermediate to felsic flows, and small felsic intrusions (Baragar, 1971; Goodwin, 1972, 1977).

Clastic and chemical sedimentary rocks are present in the stratigraphic successions in all of the volcanic centres. They characteristically occur in the upper part of the mafic to felsic cycles. The clastic sedimentary rocks consist of poorly sorted conglomerates, breccias, and coarse-grained turbidites, derived mainly from the volcanic rocks lower in the succession. They are spatially very closely associated with the calc-alkalic volcanic edifices, and grade into the volcanic rocks (Goodwin, 1972, 1977). The sedimentary sequences generally fine upwards and pass gradually into chert-rich oxide facies iron formation.
Oxide facies iron formations occur as thick and extensive units which cap the different mafic to felsic cycles in the volcanic centres (Ridler, 1976; Goodwin, 1972, 1977).

As in the marginal parts of the belt, the stratigraphic successions in the interior are characterized by several mafic to felsic cycles with associated clastic and sedimentary rocks. However, in the interior parts of the belt, these cycles are composed mainly of tholeiitic mafic flows with coeval mafic intrusions and only insignificant amounts of calc-alkalic intermediate to felsic volcanics (Goodwin & Ridler, 1970; Descarreaux, 1973; Goodwin, 1977). The clastic sedimentary rocks which are found in upper part of the cycles consist of distal fine to medium grained turbidites. The mafic to felsic cycles are capped by thin discontinuous units of carbonate and sulphide facies iron formation. The changes in the nature of clastic and chemical sedimentary rocks is interpreted by Ridler (1976) and Goodwin (1977) as being indicative of a change in the paleoslope of the basin and depositional environment.

The volcanic rocks of the Abitibi belt have been intruded by several granitic batholiths and stocks. Most of these plutons are located in the interior of the belt, but several of the volcanic centres have also been intruded by granitic plutons. The granitic plutons can be subdivided into two groups: synkinematic tonalitic to dioritic plutons, and post-kinematic granite to granodiorite plutons. The rocks in the post-kinematic plutons are generally massive and usually more potassic than the rocks they intrude (Viljoen & Viljoen, 1969; Anhauser, 1973; Hickman & Lipple, 1975; and Glikson & Lambert 1976). These plutons are concordant on a regional scale and discordant on a local scale. Structural evidence from within the plutons and surrounding volcanics is indicative of a diapiric mode of emplacement (Drury, 1977; Goodwin & West, 1974).

Radiometric age dating of undeformed post-kinematic plutons within the Abitibi belt by Wanless and Loveridge (1972),Steiger and Wasserburg (1969), and Dallmeyer et al., (1975) suggests that many batholiths were emplaced during the period 2650-2700 M.A. Age dates from deformed pre-or syn-kinematic tonalitic-dioritic plutons by Krogh and Davis (1971), Wanless et al., (1970) indicate a time of intrusion between 2780 M.A. and 2820 M.A. (Dallmeyer et al., 1975).

Metamorphism in the Abitibi belt is commonly of greenschist grade, and even as low as zeolite grade in a few localities (Jolly, 1974; Goodwin 1977; Dimroth et., 1982, 1983). However, close to the boundaries of the belt and adjacent to the granite-granodiorite stocks and batholiths the grade of metamorphism reaches amphibolite and hornblende hornfels, respectively (Dimroth et al., 1982, 1983). Age dates from pre-kinematic and post-kinematic granitic plutons suggest that Kenoran metamorphism must have occurred between 2650-2700 M.A. and 2780-2820 M.A. (Dallmeyer et al., 1975).

The main structural feature of the Abitibi belt is a series of large east-west trending isoclinal folds (Goodwin, 1977). In Timmins and Chibougamau mining camps, north-south trending folds are also present (Allard et al., 1972; Davies, 1977; Karvinen, 1981; Daigneault & Allard, 1984). In the Chibougamau area north-south trending folds are older than east-west trending folds (Daigneault & Allard, 1983, 1984). Age relationships between the two generations of folds in the Timmins area are unclear at present. In addition, there has been some localized folding adjacent to some of the large granite-granodiorite batholiths. Another important feature of the Abitibi belt is the presence of large faults and/or shear zones in the marginal parts of the belt. The Porcupine-Destor fault in the Timmins camp, and the Cadillac-Larder Lake fault in the Val-d'Or, Noranda, and Kirkland Lake camps have strike lengths in excess of 100km. They developed as zones of normal faulting during accumulation of the supracrustal sequence. During the Kenoran orogeny they were transformed into zones of thrust faulting (Dimroth et al., 1982, 1983).

Information on the displacements along these major structures is lacking but it is believed to be on the order of several kilometers. Several generations of smaller faults and shear zones are common in all parts of the belt.

The evolution of the Abitibi belt during Archean time can be briefly summarized as follows: (1) volcanism and sedimentation on a pre-existing gneissic basement prior to 2780-2820 M.A., and intrusion of tonalitic-dioritic plutons into the volcanic and sedimentary rocks in the period 2780-2820 M.A.;(2) metamorphism and deformation during the Kenoran orogeny in the period 2650-2700 M.A. to 2780-2820 M.A.; (3) intrusion of post-kinematic potassic plutons at 2650-2700 M.A. The rocks along the western margin of the Abitibi belt were deformed during the formation of the Kapuskasing structural zone in the Hudsonian orogenic event (1800 M.A.). The rocks along the eastern boundary of the belt were deformed during the Grenville orogeny (950 M.A.).

GEOLOGY OF THE CHIBOUGAMAU DISTRICT

The Chibougamau district is situated in the extreme northeastern part of the Abitibi greenstone belt (Figure 2). Supracrustal rocks in the area have been divided into two groups: the Roy Group, and the Opemiska Group. The distribution of the different stratigraphic units in the district is shown in Figure 3.

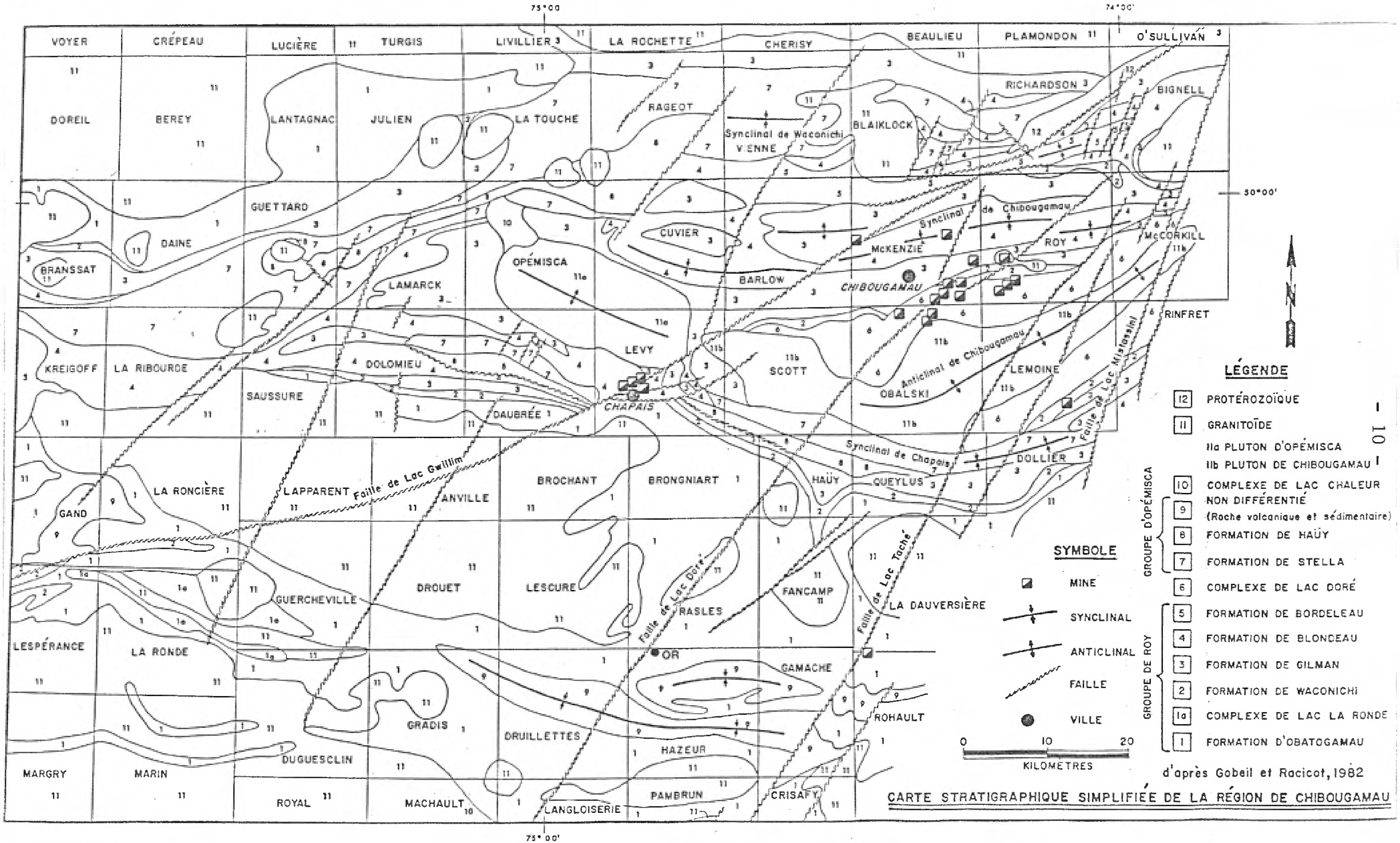

Figure 3: Generalized Geological Map of the Chibougamau District (from Gobeil and Racicot 1982)

SUPRACRUSTAL ROCKS

Roy Group

The Roy Group is comprised of two mafic to felsic volcanic cycles. The lowermost unit of the first volcanic cycle is the Obatogamau Formation. This formation is extensive and has been traced westward from the Grenville front for over 100 km. It consists of 3,000 metres of pillowed basalts and numerous gabbro sills. The basalts are plagioclase phyric at many localities. Felsic to intermediate tuffs and breccias constitute a very small portion of the formation. The extent of the formation and the nature of the flows are indicative of a submarine lava plain environment (Allard et al., 1984).

Rocks of the Obatogamau Formation are overlain by those of the Waconichi Formation. It is less than 1,000 metres thick and is comprised of porphyritic soda-rhyolites, felsic tuff breccias, a few lenses of basaltic flows and tuffs, hyaloclastites and iron formation. The distribution of the various lithologies is indicative of widespread felsic volcanism localized in many small submarine eruptive centers. The small volcanic edifices are locally capped by a carbonate and/or sulphide facies iron formation (Lac Sauvage Iron Formation).

Rocks of the first volcanic cycle are conformably overlain by the pillowed basalts and comagmatic gabbro sills of the Gilman Formation. It has a maximum thickness of 3,600 metres in the central part of the Chibougamau district and thins in all directions away from the center. The nature and distribution of the different flow units are similar to those of large central shield volcanic complexes (Allard et al., 1984).

The Blondeau Formation is the upper part of the second volcanic cycle. Rocks of this formation conformably overlie those of the Gilman Formation. It is approximately 1,000 metres thick and consists of variolitic basalts, rhyolitic flows, felsic tuffs and breccias, cherty and graphitic tuffs and argillites, and volcanogenic sandstones and greywacke. Relationships among the different facies are interpreted by Dimroth et al., (1982) and Archer (1984) as the result of volcanism creating emerging volcanic islands and concurrent erosion and sedimentation in adjacent sedimentary basins.

The Bordeleau Formation as defined by Caty (1979) is restricted to the Waconichi Syncline north of Chibougamau. It is comprised of volcanogenic sandstones. Mueller et al., (1984) interpret this formation to be part of the Chebistuan/Stella Formation. The inferred environment of deposition is fault bounded basins adjacent to emerging volcanic islands.

Opemiska Group

The contact between rocks of the Roy Group and those of the Opemiska Group ranges from a conformable transitional contact to a profound unconformity (Allard et al., 1984). Cimon (1976) subdivided rocks of the Opemiska Group into the Stella and Hauy Formations. At the type localities in the Chapais syncline the Stella Formation is comprised of a basal polymictic conglomerate succeeded upward by an interlayered sequence of feldspathic sandstones and argillites. The overlying Hauy Formation consists of an intercalated sequence of feldspathic sandstones, argillites, and porphyritic potassic andesites.

On the basis of sedimentological and volcanological studies, Dimroth et al., (1982) suggest that rocks of these formations should be considered as a single unit. Paleogeographic reconstruction of the sedimentary basins represented by rocks of this group indicate contemporaneous subaerial volcanism, rapid erosion, and sedimentation in adjacent fault bounded basins.

MAFIC INTRUSIONS

Supracrustal rocks in the Chibougamau district have been intruded by several concordant mafic layered complexes. The Dore Lake Complex has been emplaced into the upper part of the Waconichi Formation. The Chaleur Lake Complex is intrusive into rocks of the Gilman and Blondeau Formation whereas the Opawica River Complex has been intruded into rocks of the Obatogamau Formation. These intrusions are characterized by a suite of rock types and primary structures are similar to those found in other well studied layered intrusions such as the Bushveld and Skaergaard Complexes (Allard et al., 1984).

The Cummings Complex has been emplaced into rocks of the Blondeau Formation. It is comprised of three sills which have been traced westward from the Grenville front for over 160 km. The three sills always occupy the same relative stratigrahic positions. The lower-most Roberge sill consists of dunite and peridotite. The Ventures sill which occupies a slightly higher stratigraphic position is composed of gabbro. The stratigraphically highest Bourbeau sill is comprised of leucogabbro and quartz ferrodiorite. Each of the three sills is differentiated and the three sills together form a larger differentiated unit (Allard et al., 1984).

GRANITIC ROCKS

The greenstone belt in the Chibougamau district is bordered to the north and south by granitic plutons and gneisses. Within the greenstone belt Racicot et al., (1984) have subdivided felsic intrusions into four categories: remobilized basement domes, pre-kinematic intrusions, syn-kinematic intrusions, and post-kinematic intrusions.

Basement domes such as the Lapparent Massif are composed of migmatized tonalite-diorite gneiss that has been intruded by two generations of mafic dykes and subjected to at least three major deformation events. Pre-kinematic plutons such as the Chibougamau Pluton are composite intrusions of tonalitic to dioritic composition. Syn-kinematic plutons occur in two distinct tectonic settings and show two distinct petrographic suites.

They occur either along the contact between basement and younger supracrustal rocks or in discreet masses with sub-circular outlines along major tectonic highs. Compositionally they belong either to a quartz monzonite or tonalite suite. There are pronounced contact metamorphic aureoles, associated with these intrusions, which are in part superimposed on fabrics developed in regional structural events. Post-kinematic plutons are granodioritic in composition. They are often prophyritic and exhibit compositional zoning rather than multiple intrusion. Adjacent wall rocks are locally deformed and extensive contact metamorphic aureoles superimposed on earlier fabrics are present around the plutons.

STRUCTURAL DEVELOPMENT

The Abitibi greenstone belt in the Chibougamau district has the form of a major synclinorium developed on basement granitic gneisses. Polyphase deformation has affected all the lithologies within the greenstone belt. The Chibougamau anticline is the central structure of the area, and is bordered to the south by the Chapais syncline and to the north by the Chibougamau syncline (Duquette, 1970). West of Chapais, the two synclines merge into a major synclinorium. Caty (1977) has identified the Waconichi anticline and syncline north of the Chibougamau syncline. South of the Chapais syncline Hebert (1980) has mapped the La Dauversiere anticline.

Early north trending folds have been reported by Allard (1976), Durocher (1978), Hebert (1979) and Daigneault et al., (1983, 1984). Sedimentary rocks of the Opemiska group have not been affected by the early north-south folding event. All supracrustal rocks have been affected by the regional east-west folding event.

On the basis of radiometric age dates, the regional east-west folding event and contemporaneous metamorphism occurred between 2,650 and 2,820 M.A. (Dallmeyer et al., 1975).

Rocks in the Chibougamau district are transected by four major systems of faults. East-west striking faults are generally subparallel to lithological contacts, are up to 1 km wide and can be traced for several tens of kilometers along strike. Rocks within and adjacent to these faults are highly carbonatized. Charbonneau (1981), Allard (1982) and Daigneault et al., (1983) mapped the Kapunapotagen fault in the Chapais syncline. It has been traced westward from the Grenville front for over 80 km. The nature of the fault and its sense of movement have not been established. The fault separates south facing sedimentary rocks of the Opemiska Group and north facing volcanic rocks of the Roy Group (Allard et al., 1984). The similar Faribault fault in the Chibougamau syncline separates north facing volcanic rocks of the Waconichi Formation and southward facing sedimentary rocks of the Bordeleau Formation (Daigneault et al., 1983).

The Mistassini Lake, the Tache Lake, the Dore Lake-McKenzie Narrows, and the Gwillim Lake faults are major northeast striking faults, which have an apparent left lateral sense of movement. The fault zones are several hundred metres wide and are comprised of an anastomosing network of faults and/or shear zones. On the basis of cross-cutting relationships, they are younger than E-W trending faults.

Where the Dore Lake-McKenzie Narrows fault transects the Dore Lake Complex, north-west striking faults and/or shears are common and in some cases host copper mineralization (Gobeil et al., 1984).

The area adjacent to the Grenville front is characterized by a series of closely spaced N-S to N20E striking faults. The spacing between faults increases westward away from the Grenville front. The faults are of a reverse nature and dips range from 50° SE at the front to vertical a few kilometers west of the Grenville front. The area adjacent to the front is also characterized by a higher metamorphic grade and Grenville style and age fabrics and structures superimposed on older fabrics and structures (Allard et al., 1984).

ORE DEPOSITS IN THE CHIBOUGAMAU DISTRICT

To date 25 ore deposits have been discovered in the Chibougamau district. Of these twenty-five deposits, 18 are copper-gold fissure deposits, two are volcanogenic massive sulfide deposits and five are quartz vein type gold deposits. Seventeen of the copper-gold fissure deposits are situated in shear zones in the Anorthosite Zone of the Dore Lake Complex, and one deposit is localized in a border phase of the Chibougamau Pluton. The two massive sulfide deposits are situated in the felsic volcanic rocks of the Waconichi Formation. Several copper-zinc prospects occur in felsic volcanic rocks of the Blondeau Formation.

The gold deposits in the district are localized in or adjacent to zones of intense hydrothermal alteration and deformation. They are structurally controlled, and occur in a variety of rock types and in different formations. In addition, important deposits of vanadiferrous and titaniferrous magnetite occur in the layered zone of the Dore Lake Complex (Allard, 1976).

QUATERNARY GEOLOGY

The unconsolidated glacial sediments in the region were deposited during the Wisconsin glaciation and subsequent glacial retreat (approximately 7,000 B.P.). The glacial sediments can be subdivided into three broad categories: (A) tills, (B) esker deposits and associated remobilized sediments, and (C) lacustrine sediments. Generalized relationships among the three categories are schematically illustrated in Figure 4.

Two main glacial flow directions are found in the Chibougamau district (Prichonnet et al., 1984). An early advance towards the southeast is indicated by striae predominantly oriented at 125°. Evidence of a later movement towards the southwest includes fluting (225°), striae (215°) and carbonate erratics derived from the Mistassini Basin to the northeast. A re-orientation of the flow direction towards the west-southwest during the waning stages of the latter glaciation is demonstrated by crosscutting striae and by glaciotectonic structures, such as folds and shears, superimposed on melt-out till.

Glacial deposits associated with the early ice sheet are not known. However, south-southwest trending drumlins indicate the presence of unconsolidated sediments prior to the second glacial advance (S.A. Averill, pers. comm.).

A lodgment till sheet is related to the second ice movement. A melt-out sequence of stratified and ablation tills locally overlaps lodgment till. Till matrix is silty sandy; the proportion of finer grained material decreases from the base to

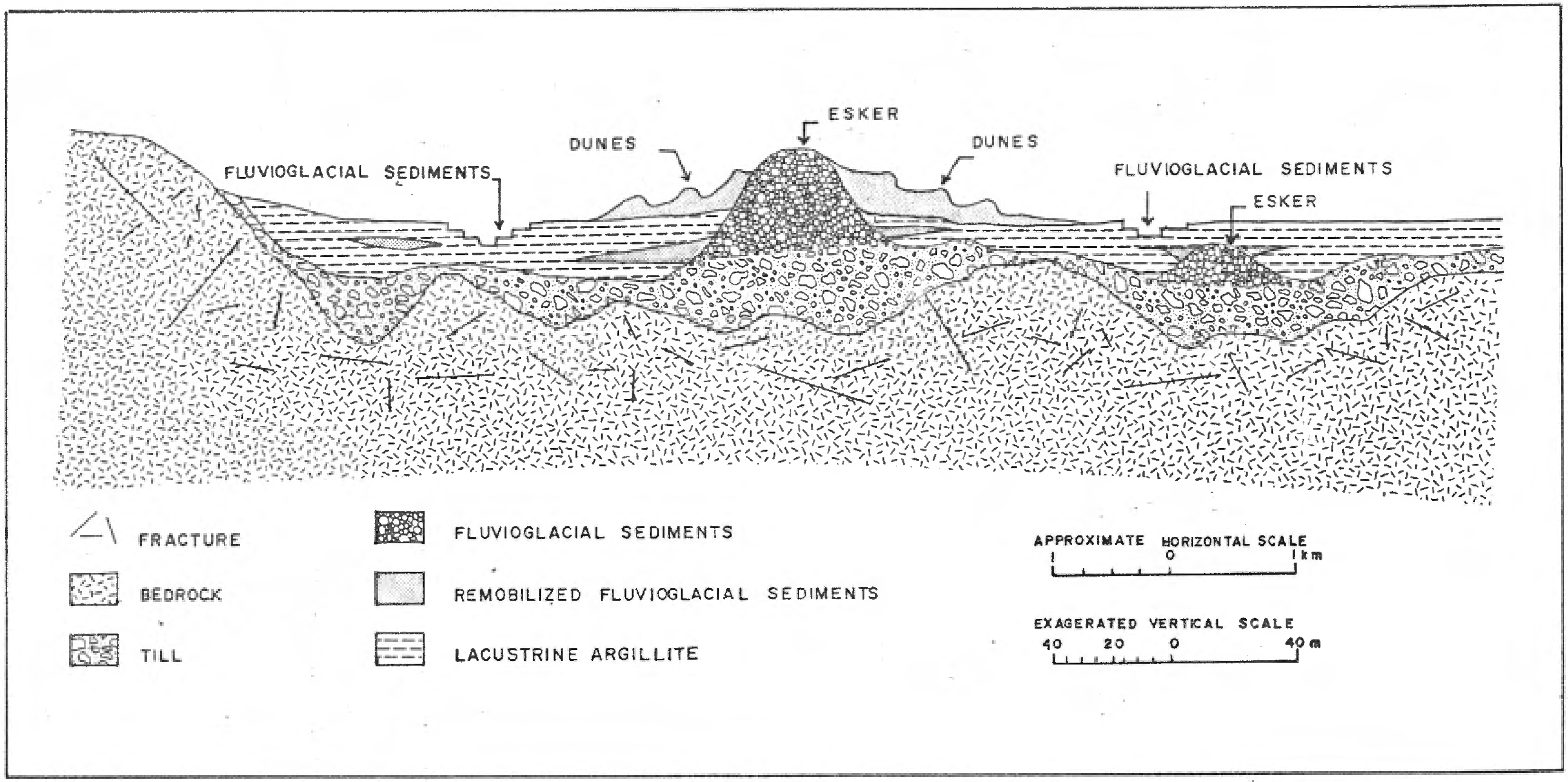

Figure 4: Generalized Relationships among Till, Glaciofluvial, and Glaciolacustrine Deposits (from Lalonde et al 1982).

the top of the till section (Ermengen, 1957; Prichonnet et al., 1984). Minor-Rogen or ribbed-moraines are oriented transverse to the direction of the second glacial advance (Mawdsley, 1936; Norman, 1938; Prichonnet et al., 1984). Although the genesis of these features is not well-understood, they commonly contain an abundance of locally derived clasts.

Glaciofluvial sand and gravel deposits are found in eskers and associated delta complexes. The mode of the trends of esker segments is 055°-235° (Prichonnet et al., 1984). Glaciofluvial sediments are intercalated with till on a local scale.

Lacustrine sediments are related to the proglacial Lake Ojibway. Littoral beach gravels and boulder fields, and sublittoral sands are preserved on the slopes of drumlins, eskers and bedrock highs. Varved silts are restricted to isolated paleobasins (Prichonnet et al., 1984).

PROPERTY GEOLOGY

There are no outcrops on the property. On the basis of six diamond drill holes the property appears to be underlain by an interlayered sequence of clastic sedimentary rocks and graphitic schists.

Quaternary deposits consist mainly of till, with minor intervals of glaciofluvial and glaciolacustrine sediments in the upper part of the sequence. Only one till sheet is recognized; related landforms include till mounds and minor moraines.

Southwesterly glacial flow is indicated by carbonate erratics derived from the Mistassini Basin. Glacial striae in the area indicate a flow direction of ≈ 220°.

GOLD GEOCHEMISTRY OF TILL

Our understanding of glacial sedimentation has greatly increased in recent years largely as a result of observations and experiments made around modern glaciers. This knowledge spurred the development of new methodologies and technologies for using glacial sediments in the search for mineral deposits in overburden covered areas. Till sampling is one such tool which has greatly benefited from the increased activity and interest in this domain.

The basic principle in till prospecting is that glacial ice moving over an exposed ore deposit scours the upper part of the deposit. The scoured and crushed ore fragments are physically dispersed down ice and deposited as a dispersion fan in till. Systematic sampling of till, and analysis for elements or element associations characteristic of the type of deposit sought, should allow identification of dispersion trains located down ice from potential ore deposits. The dispersion train is much larger than the deposit from which it was derived. Hence the target area is larger and easier to locate.

Interpretation of till anomalies has been based on the principle of physical, down ice dispersion of mineralization by glacial ice. It is possible that in some cases gold grains found in till are epigenetic and grew "in situ"; indicating that groundwater flow patterns may be important factors in interpreting and following up till anomalies.

With respect to gold exploration, Overburden Drilling Management (ODM) have clearly demonstrated the effectiveness of till sampling as an exploration tool. The following description of gold geochemistry of till in the Abitibi belt is mainly drawn from ODM's observations (MacNeil & Averill, 1985).

Regional Gold Background

Most gold occurences in the Abitibi belt are of the free gold type. Thus, the gold background of tills over the Abitibi belt is mainly caused by free gold particles. Due to the nugget effect (the chance occurrence of a coarse gold particle in a given sample) the gold background of till samples collected at the same site can vary by several orders of magnitude.

The nugget effect can be overcome if a sample of sufficient size is collected and all of the gold is concentrated into a small heavy mineral fraction that is then analyzed in its entirety (Clifton et al., 1967). At least 50 kg of till would be needed to minimize the nugget effect. However, it is impractical to collect, process or analyze samples of this size. Based on practical considerations, samples have been standardized to 7-9 kg.

Rather than trying to eliminate the nugget effect, procedures for recognizing and discounting anomalies that are caused by it, have been developed. The dimensions of all gold grains sighted on the table or recovered by panning are measured and these dimensions are used to calculate the contribution of each gold grain to the concentrate assay. Most gold particles occur as thin flakes and it is difficult to position these flakes on edge to measure their thickness. However, the thickness of a typical flake is a function of its diameter. For flakes of less than 1,000 microns diameter, this relationship is expressed by the following equation:

$$t = 0.2d - 0.01\frac{(d - 100)}{100}d \qquad (d = \text{diameter of flakes})$$

By measuring the diameter of the gold flake, and considering the flake as a disc, it is possible to calculate the volume of gold in a given flake, and from the volume to calculate the geochemical assay that the flake would produce in a sample of specific size. Clifton et al., (1967) showed that a 100 micron flake will produce a value of approximately 100 ppb in a 15 gram sample. The analyzed concentrates of standard samples also weigh about 15 grams. The range of assays produced in a "standard" concentrate by a single gold flake of varying size is as follows:

Size Classification	Flake Diameter (microns)	ppb Au
Very fine	50	10
"	100	100
Fine	150	330
"	200	760
Medium	300	2,400
"	400	5,400
"	500	10,000
Coarse	600	16,200
"	700	24,000
"	800	33,300
"	900	43,700
"	1000	55,000
Very Coarse	1000+	55,000+

Erratic gold grains from distant sources are scattered throughout the till. Considering the contribution of a single gold grain to a typical concentrate assay, normal gold background for till concentrates ranges from less than 10 ppb to more than 55,000 ppb. Fewer than 30 percent of till concentrates from the Abitibi region yield gold assays lower than 10 ppb. Ten to fifteen percent of samples contain a gold grain that produces an assay over 1,000 ppb.

Thick gold particles do not separate well from magnetite on the shaking table, and in more than 90 percent of the cases where a high asay is reported for a sample in which gold is not seen on the table, the assay is caused by a single thick gold particle coarser than 150 microns. This can be proved by panning the retained 1/4 concentrate and assaying it, preferably by the non-destructive neutron activation method. If the 3/4 concentrate assay is caused by a single gold grain, the 1/4 assay will be low. If the assay is caused by fine gold, a large number of grains would be required and several such grains will be present in the 1/4 concentrate. If it is caused by invisible gold in sulphides, the 1/4 concentrate will normaly contain more than 10 percent pyrite plus elevated levels of another sulphilde mineral such as arsenopyrite, galena, chalcopyrite or molybdenite, and will assay the same as the 3/4 concentrate. Alternatively, in cases where the entire concentrate is analyzed by non-destructive methods, the sample can be panned to determine if the high gold value is caused by background nugget effects.

Anomaly Threshold Levels

Glacial dispersion trains comprise a head of very high metal concentrations in drift at or near the source which decays quickly down-ice to a ribbon-shaped tail of dispersal where metal levels are diluted by metal-poor debris (Shilts, 1984). ODM has established that, as source is approached, the grade of till concentrates from base metal, uranium and gold dispersion trains is similar to the grade of the source provided the source is of normal width (5 to 10 meters) and is oriented perpendicular to the direction of ice advance. However, the tail of dispersal is much larger than the head and is commonly the part of the train that is detected. There is also the possibility of intercepting a portion of a dispersal train derived from subore extensions of a deposit. In light of these considerations, a low anomaly threshold, in conjunction with gold grain counts and pathfinder mineral/element ratios, should be used in interpretation of gold values in till concentrates.

Threshold levels for documented till concentrate dispersion trains in the Abitibi belt vary considerably. An anomaly threshold of 3,000 ppb gold is proposed at Asarco's Aquarius and Watabeag prospects near Timmins (Gray, 1983). Other examples from trains in the Timmins-Kirkland Lake area include 1200 ppb gold at the Owl Creek deposit and 1,000 ppb Au with greater than 1,000 ppm arsenic at Placer's McCool Township prospect (PDA Ann. Meeting, March 10, 1986). At Inco/Golden Knight's Golden Pond deposits in the Casa Berardi area, gold values greater than 2,000 ppb and coincident arsenic levels greater than 1,000 ppb are considered to be significant (Sauerbrei et al., 1985). These examples indicate that threshold levels must be established independently for each exploration target area. It should be noted that, for the case studies cited above, other criteria such as ore clast and gold grain counts and stratigraphic considerations are important in assessing the significane of gold anomalies in till.

Stratigraphic Properties of a Dispersion Train

Glacial processes are systematic and heavy mineral dispersion trains in tills have specific configurations (Averill, 1978). For example, dispersed material tends to be sheeted progressively upward in the ice with increasing distance from source, causing the trains to rise in the till and thicken down-ice. Lateral spreading, in contrast, is minimal.

Gold, base metal and uranium dispersion trains traced to source by ODM have had the following properties:

1. At a specific distance from source, anomalous metal concentrations were at a specific level within a specific till unit.

2. The train was at least two samples (2-3 m) thick unless:
    a. The host till was very thin
    b. The train was intersected within 100 m of source

3. The width of the train was not more than twice the cross-ice length of the source mineralization

4. The maximum length of the train was 1 km (gold) to 5 km (base metals/uranium) for deposits oriented perpendicular to glaciation.

Properties of a Free Gold Dispersion Train

Approximately 15 percent of background till samples over the Abitibi belt produce heavy mineral gold anomalies higher than 1,000 ppb due to the nugget effect. For the heavy mineral method to be effective, free gold dispersion trains, which are relatively rare, must be differentiated from spurious nugget anomalies. This is done on the basis of the gold grain counts rather than the assays. The gold particles in significant dispersion trains have the following properties:

1. At least 10 gold particles are present per 8 kg of matrix.

2. The gold particles fall within a specific size range, reflecting the size of crystalline gold at source.

3. The gold particles are of common shape, reflecting a common distance of transport from source.

4. Since most gold dispersion trains are traceable for only one km, and gold particles become abraded after one km of ice transport, the shape of the gold particles is either irregular or delicate.

Background nugget anomalies, unlike dispersion trains, do not normally repeat in the section, although with 15 percent of samples containing anomalies of this type, chance repetition does occur. Another property common to dispersion trains of all types is the presence of pathfinder minerals or elements because most mineralized zones are multi-metallic. Even deposits that are considered to be strictly free gold occurrences generally have halos containing sufficient minerals, such as pyrite, arsenopyrite, galena, chalcopyrite and molybdenite or elements such as arsenic, antimony, tungsten and bismuth, for a pathfinder association to be evident in the dispersion train. Nugget anomalies have no pathfinder association.

Properties of an Invisible Gold Dispersion Train

In invisible gold trains it is not possible to use gold particle shape to predict distance to source. The distance must be gauged from the vertical positions of the anomaly in the host till and of the till in the stratigraphic succession. In most other respects, however, invisible gold dispersion trains are easier to trace than free gold dispersion trains. The following specific advantages are cited:

1. A pathfinder mineral association is always present.

2. The pathfinder minerals occur in sufficient concentrations that they can be seen in pebbles as well as in the heavy mineral fraction, and the host rock can therefore be determined.

3. The source mineralization is generally conductive and can be located by geophysical methods.

4. Gold/pathfinder metal ratios in the concentrates are relatively constant, and any interference from background nuggets is readily recognized.

5. The dispersion trains are longer and more uniform than free gold trains.

TILL SAMPLING ON THE OPAWICA RIVER PROPERTY

Sampling Procedures, Sample Processing, and Analysis

One hundred and twenty nine till samples, from 23 holes, were collected on the Opawica River property. Samples were obtained using a Nodwell mounted Acker reverse circulation drill. Hole locations are shown in Figure 5. Sample intervals in gravel and till were 3.0 and 1.5 metres respectively. Till samples were sieved through a 10 mesh screen. The samples averaged 5 kg each and were sent to the ODM laboratory in Nepean, Ontario for processing. Sample processing included wet sieving through a 10 mesh (1.7 mm) screen, preconcentration of the -10 mesh material on a shaking table, methylene iodide (SG 3.3) heavy liquid separation, and magnetic separation. Sample concentrates were refined in a delicate panning operation to obtain a reliable estimate of the total number of gold grains present. This additional processing was required because many of the gold grains were finer than the minimum size (125 microns) that separates cleanly from magnetite and sulphide minerals on the table. Pan concentrates were scanned under a binocular microscope and gold grains were classified as to shape, and measured to determine their influence on the analysis of the concentrate. The entire non-magnetic heavy mineral concentrate was analyzed for Au, Na, Ca, Sc, Cr, Fe, Co, As, Mo, Sb, Ba, La, Ta, W, Th, U by X-Ray Assay Laboratories, Don Mills, Ontario by neutron activation methods. Sample intervals are indicated on the logs, in Appendix II, and laboratory logs for each specimen in Appendix III.

Bedrock was reached in all of the twenty three holes. Bedrock chips were sent to X-Ray Assay Laboratories, Don Mills, Ontario and analysed for Au and As. Assay results are presented in Appendix IV.

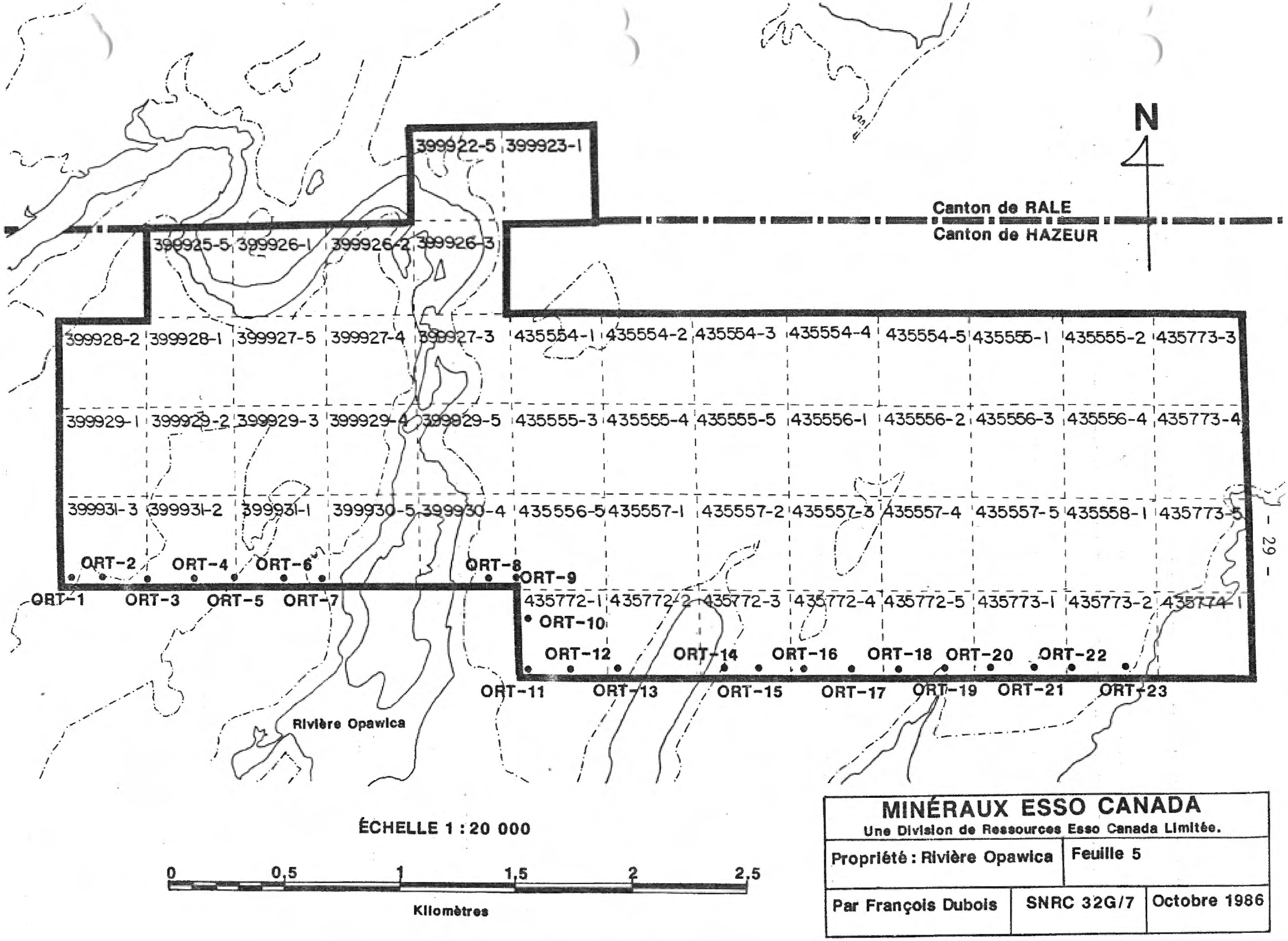

Figure 5: Location of Reverse Circulation Holes on the Opawica River property.

Till Geochemistry

Of the one hundred and twenty nine till samples collected only specimens ORT-03-02, ORT-11-09,and ORT-13-07 contain greater than 10 gold grains. The first sample is from the central part of the till sheet whereas the other two specimens are from the lower part of the till sheet. Specimens ORT-04-02, ORT-06-01, ORT-08-01, ORT-15-09, ORT-15-10, ORT-19-01, ORT-21-04 each contain nine gold grains in the heavy mineral concentrates.

CONCLUSIONS AND RECOMMENDATIONS

Anomalous numbers of gold grains are present in the basal portion of the till sheet in the area around holes ORT-11 and ORT-13. Sub-anomalous numbers of gold grains occur in till in the lower part of hole ORT-15. It is recommended that additional reverse circulation drilling be carried out to better define the anomalies, and to try to locate the source of the gold grains.

October, 1986

Marcel Durocher

Marcel Durocher

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APPENDIX I

CLAIM STATUS

LICENCE #	CLAIMS	EXPIRY DATE
399922	5	June 20/87
399923	1	June 11/87
399925	5	June 13/87
399926	1,2,3	June 14/87
399927	3,4,5	June 15/87
399928	1,2	June 16/87
399929	1,2,3,4,5	June 17/87
399930	4,5	June 18/87
399931	1,2,3	June 19/87
435554	1,2,3,4,5	Oct 28/86
435555	1,2,3,4,5	Oct 29/86
435556	1,2,3,4,5	Oct 30/86
435557	1,2,3,4,5	Oct 31/86
435558	1	Nov 1/86
435772	1,2,3,4,5	Nov 22/86
435773	1,2,3,4,5	Nov 23/86
435774	1	Nov 23/86

APPENDIX II

REVERSE CIRCULATION LOGS

REVERSE CIRCULATION DRILL HOLE LOG

DATE 18-09 1986

SHIFT HOURS

____ TO ____

TOTAL HOURS

CONTRACT HOURS

HOLE NO ORT-1 LOCATION ORT-1

GEOLOGIST D. Garand DRILLER G. Hong BIT NO. SAME AS J. JANSENS LAST HOLE BIT FOOTAGE ? + 8.5m

MOVE TO HOLE 12:40 - 12:50

DRILL 1:00 - 1:45

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER Minor problem with hydrolic wrench, repared from 1:45 - 2:10.

MOVE TO NEXT HOLE 2:10 - 2:20

NOTE: D7 bulldozer began road preparation at 8 AM. Operator returned to campsite at 10 AM stating the D7 was stuck. Drill crew departed campsite at 10:10 AM, arrived at stuck D7 at 11:20. From 11:20 to 12:40 de liberated D-7, which resumed road prepartion at 12:40.

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
				0.0 - 2.5m ; Organics
1				2.5 - 3.5m ; Sand - medium grained brown colour, contained few pebble size clasts
2				
3				3.5 - 6.2m ; Till Boulders 4.0 - 4.5m 5.6 - 6.0m
4			1	Matrix
5				3.5 - 6.2m Grey med. grained sand
6			2	
7				Clasts 3.5 - 4.5m Pebbley, sub-angular Volcanics/Sediments 85% Granites 15%
8				
9				4.5 - 5.6m Cobbley, sub-angular Volcanics/sediments 85% Granitic 15%
10				
11				5.6 - 6.2m Pebbley/Cobbley 50-50 sub-angular Volcanics/Sediments 90% Granitic 10%
12				
14				6.2 - 8.5m ; Bedrock Light green sericite schist containing minor amounts of dessimanated pyrrhotite (<5%) and white quartz veinlets ~5%.
15				
16				
17				
18				
20				

REVERSE CIRCULATION DRILL HOLE LOG

DATE 18 · 09 19 86
HOLE NO OR T - 2 LOCATION ORT - 2
GEOLOGIST D Garand DRILLER G. Howg BIT NO. CB 67788 BIT FOOTAGE 0.0 - 7.5m
SHIFT HOURS
TO
MOVE TO HOLE 2:10 - 2:20
DRILL 2:25 - 3:05
TOTAL HOURS
MECHANICAL DOWN TIME
DRILLING PROBLEMS
CONTRACT HOURS
OTHER
MOVE TO NEXT HOLE 3:10 - 3:15

Note: New drill bit and drill bit sub, fixture at start of hole.

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
1				0.0 - 3.4m ; Organics
2				3.4 - 5.0m ; Grey silt (rare clast) or till ?
				5.0 - 5.6m ; Till
4			1	Matrix
5				5.0-5.6m grey, silty
6				
7				Clasts
8				5.0-5.6m Pebbley, sub-angular, relatively very few clasts.
9				Volcanics/Sed. 90% Granitic 10%
10				
11				Note: Washed hole 3 times to obtain sufficient amount for sample. Till quality affected.
12				Till contains considerable bedrock powder contamination
13				
14				
15				5.6 - 7.5m ; Bedrock
16				Dark green, fine grained feldspar phenocryst (2-3mm)
17				mafic volcanic, Contains minor amounts of diss.
18				py <5% and white quartz veinlets <5%
19				
20				

REVERSE CIRCULATION DRILL HOLE LOG

DATE 18-09 1986
SHIFT HOURS
TO
TOTAL HOURS
CONTRACT HOURS

HOLE NO ORT-3 LOCATION ORT - 3
GEOLOGIST D. Garand DRILLER G. Howg BIT NO. CD 67788 BIT FOOTAGE 7.5 - 16.0m
MOVE TO HOLE 3:10 - 3:15
DRILL 3:20 - 4:20
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 4:25 - 4:35

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
				0.0 - 1.5m ; Organics
1				1.5 - 6.9m ; Till
2				Boulders 4.7 - 5.2m 5.7 - 5.9m 6.2 - 6.7m
3			1	Note: Sample 3 contains probable boulder contamination
4				Matrix 1.5 - 2.5m Brown, silty
5			2	2.5 - 6.7m Grey, fine to med. grained sand
6			3	6.7 - 6.9m. Grey, silty
7				
8				Clasts
9				1.5 - 3.5m Pebbley, sub-rounded to sub-angular (SR-SA) Volcanics/Seds. 80 % Granitic 20 %
10				
11				3.5 - 6.2m Cobbley, SR-SA V/s : 80% ; Gr : 20%
12				
13				6.2 - 6.4m Pebbley/Cobbley 50-50 SA - SR V/s ; 70% ; Gr ; 30%
14				
15				6.4 - 6.9m Pebbley/Cobbley 50-50 SR - SA V/s : 80% ; Gr : 20%
16				
17				6.9 - 8.5m ; Bedrock Light greyish-green, fine greained sericite schist containing abundant white quartz veins (20%) and probable chloritoid. Noticeable decrease in chloritoid content from 8.4 - 8.5m.
18				
19				
20				

REVERSE CIRCULATION DRILL HOLE LOG

DATE 18 - 09 1986

SHIFT HOURS

____ TO ____

TOTAL HOURS

CONTRACT HOURS

HOLE NO ORT - 4 LOCATION ORT- 4

GEOLOGIST D. Garand DRILLER G. Howg BIT NO. CD 67788 BIT FOOTAGE 16.0 - 31.0 m

MOVE TO HOLE 4:25 - 4:35

DRILL 4:40 - 5:40

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE 5:50 - 6:00

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
1				0.0 - 1.4m ; No recovery (very poor recovery) 1.4 - 2.4m ; Brown pebbley - sandy gravel 2.4 - 13.5m ; Till
2				Boulders 8.2 - 8.5m
4			1	Matrix 2.4 - 7.2m Grey silty 7.2 - 7.3m Grey clayey 7.3 - 12.0m Gray silty 12.0 - 12.3m Grey clayey 12.3 - 13.6m Grey silty
8			2	Clasts 2.4 - 6.2m Pebbley SR - R V/S 80% Gr 20%
10			3	6.2 - 7.3m Cobbley SR V/S 70% Gr. 30%
12			4	7.3 - 10.7m Cobbley SA-SR V/S 85% Gr 15%
14				10.7 - 13.4 Cobbley SR V/S 60% Gr 40%
16				13.4 - 13.5 Cobbley SA V/S 75% Gr 25%
18				13.5 - 15.0m ; Bedrock Light grey, fine to med. grained well foliated wacke. Note that from 13.5 - 14.0m sample was an altered ; golden green color - carbonatized ? Contained minor dess. pyrite 3-5%. No quartz veins
20				

REVERSE CIRCULATION DRILL HOLE LOG

DATE 19 - 09 1986
SHIFT HOURS
______ TO ______
TOTAL HOURS
______
CONTRACT HOURS
______

HOLE NO ORT 5 LOCATION ORT - 5
GEOLOGIST D. Garood DRILLER G. Howg BIT NO. CD 67788 BIT FOOTAGE 31.0 - 38.0
MOVE TO HOLE
DRILL 7:10 - 7:45
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 7:50 - 7:55

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
1				0.0 - 1.5m; Organics 1.5 - 5.3m; Till
2			1	Boulders 2.9 - 3.2m
4				Matrix 1.5 - 3.1m Med. grained brown sand
5			2	3.1 - 5.3m Med grained grey sand
6				
7				Clasts 1.5 - 3.2m; Pebbley, SR - SA s/v 80% Gr. 20%
9				3.2 - 5.3m; Cobbley ; SA s/v 90% Gr 10%
10				
11				Note: From 1.7 - 4.5m interval relatively high (~ 60-70%) proportion of clasts were strongly carbonatized schists.
12				
14				
15				5.3 - 7.0m; Bedrock Dark grey, medium grained wacke containing minor (< 5%) white carbonate veinlets. No visible alteration or mineralization evident. Poorly developed foliation, massive appearance.
16				
17				
18				
20				

REVERSE CIRCULATION DRILL HOLE LOG

DATE 19-09 19 86
SHIFT HOURS
____ TO ____
TOTAL HOURS
____
CONTRACT HOURS
____

HOLE NO ORT 6 LOCATION ORT 6
GEOLOGIST D. Garand DRILLER G. Howg BIT NO. B 67938 BIT FOOTAGE 0.0 - 5.5m
MOVE TO HOLE 7:50 - 7:55
DRILL 8:00 - 8:45
MECHANICAL DOWN TIME ____
DRILLING PROBLEMS ____
OTHER ____
MOVE TO NEXT HOLE 8:50 - 9:00

NOTE: Changed drill bit at beginning of hole. Rewashed hole 2X to obtain sufficient amount of till for second sample. Bedrock sample contains minor contamination from rewashing.

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
				0.0 - 0.9m; Organics
1				0.9 - 1.3m; Coarse grained brown sand containing very few clasts.
2			1	1.3 - 3.9m; Till Matrix
3			2	1.3-3.2m: Medium - coarse grained brown sand
4				3.2 - 3.9m: Medium - coare grained grey sand (reduced)
5				
6				Clasts:
7				1.3-1.5m: Pebbley, SA - SR S/V 85% Gr 15%
8				1.5 - 3.9m: Cobbley, SA S/V 85% Gr 15%
9				(10% of S/V carbonatized schist)
10				
11				3.9-5.5m; Bedrock
12				Dark green, fine grained well foliated chloritic wacke or mafic volcanic?
13				
14				
15				
16				
17				
18				
19				
20				

REVERSE CIRCULATION DRILL HOLE LOG

DATE 19-09 19 86

SHIFT HOURS

______ TO ______

TOTAL HOURS

______

CONTRACT HOURS

______

HOLE NO ORT 7 LOCATION ORT 7

GEOLOGIST D. Garard DRILLER G. Howg BIT NO. B 67938 BIT FOOTAGE 5.5 - 8.7m

MOVE TO HOLE 8:50 - 9:00

DRILL 9:00 - 9:25

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE 9:30 - 12:35 (Moved across Opawica River)

Note: No till sample obtained due to very thin till interval.

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
1 2				0.0 - 1.4m ; Clayey Silt , rare clast 1.4 - 1.5m ; Till ? / Gravel ? NO SAMPLE
3 4 5 6				1.5 - 3.2m ; Bedrock Dark green sericite - chlorite schist bearing minor Fe-carbonates (2-3%) from 2.4 - 2.5m interval. Contains white quartz veinlets (~ 5%) and white feldspar veinlets (~ 5%).
7 8 9 10 11 12 13 14 15 16 17 18 19 20				

REVERSE CIRCULATION DRILL HOLE LOG

DATE 19 - 09 1986
SHIFT HOURS
____ TO ____
TOTAL HOURS
____
CONTRACT HOURS
____

HOLE NO ORT 8 LOCATION ORT 16
GEOLOGIST D. Garand DRILLER G. Houng BIT NO. B 67938 BIT FOOTAGE 8.7 - 14.7 m
MOVE TO HOLE 9:30 - 12:35 (Moved across Opawica river)
DRILL 12:40 - 1:10
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 1:15 - 1:25

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
				0.0 - 1.0m; Poor recovery 1.0 - 1.6m; Brown sandy gravel 1.6 - 4.7m; Till
1.6 - 4.5			1	Matrix 1.6 - 3.4m : Fine grained brown sand 3.4 - 4.7m : Grey silt. Clasts 1.6 - 4.7m : Cobbley ; SA S/V 75% Gr 25% Note: Rewashed hole once (4.5-4.7m) to obtain sufficient amount of till for second sample
				4.7-6.0m ; Bedrock Dark green, fine grained mafic volcanic, moderately well foliated. Contains white quartz veins (~5% on average), from 5.6-5.8m interval white quartz veinlets accounted for ~20%. No visible mineralization, very minor localized carbonatization.

REVERSE CIRCULATION DRILL HOLE LOG

DATE 19·09 1986

SHIFT HOURS

____ TO ____

TOTAL HOURS

CONTRACT HOURS

HOLE NO ORT-9 LOCATION ORT - 15

GEOLOGIST D. Garand DRILLER G. Howg BIT NO. B. 67938 BIT FOOTAGE 8.7-23 m

MOVE TO HOLE 1:15 - 1:25

DRILL 1:30 - 2:50

MECHANICAL DOWN TIME Difficulty retreiving 5 rods from hole time spent 2:50-3:55

DRILLING PROBLEMS Finally retreived all 5 rods but lost drill bit + sub in process.

OTHER

MOVE TO NEXT HOLE 4:00 - 4:10

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG

DEPTH IN METRES: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

SAMPLE NO.: 1 2 3 4 5 6 7

0.0 - 1.3; Poor recovery

1.3 - 13.1; Till

Boulders

0.0 - 0.3m

1.0 - 1.3m

11.2 - 11.6m

Matrix

1.3-9.2m : Fine grey sand and silt

9.2-9.3m : Grey clayey silt

9.3-11.9m : Fine grained grey sandy-silt

11.9-12.2m : Grey clay

12.2-13.1m : Grey fine sand-silt

Clasts		S/V	Gr
1.3-4.3 m	Cobbley, SA;	70%	30%
4.3-8.5 m	Pebbley, SA/SR	85%	15%
8.5-8.7 m	Noticeably fewer clasts		
8.7-9.6 m	Pebbley, SA/SR	85%	15%
9.6-12.3 m	Cobbley, SA	85%	15%
12.3-12.5 m	Pebbley, SA	90%	10%
12.5-13.1 m	Pebbley, SA	95%	5%

13.1-14.3m; Bedrock

Dark green, fine to medium grained epidotized mafic volcanics containing pyrite (dess. and euhedral cubes (1-3mm, ~5%)). Minor white quartz veinlets ~5%. Has well developed foliation, almost schistose.

REVERSE CIRCULATION DRILL HOLE LOG

DATE 19 · 09 19 86

SHIFT HOURS

____ TO ____

TOTAL HOURS

CONTRACT HOURS

HOLE NO ORT - 10 LOCATION ORT 14

GEOLOGIST D. Garand DRILLER G. Howg BIT NO. B 67939 BIT FOOTAGE 0.0 - 12.0m

MOVE TO HOLE 4:00 - 4:10

DRILL 4:15 - 5:15

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE 5:25 - 5:35

NOTE : New bit and bit sub at beginning of hole.

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
1–2				0.0-0.7m; No recovery 0.7-1.3m; Coarse brown sand
2–3			1	1.3-11.2m; Till
3–4.5			2	
4.5–6			3	
6–7.5			4	
7.5–9			5	
9–10.5			6	
10.5–11.2			7	
				11.2-12.0m; Bedrock

0.0-0.7m; No recovery

0.7-1.3m; Coarse brown sand

1.3-11.2m; Till

Boulders

7.2-7.4m

Matrix

1.3-3.3m: Fine grey sand-silt
3.3-7.2m: Med. to fine grey sand
7.2-9.8m: Fine grey sand-silt
9.8-10.0m: Grey clayey silt
10.0-11.2m: Grey silt

Clasts

		S/V	Gr
1.3-5.6m:	Cobbley, SA	85%	15%
5.6-7.4m:	Cobbley, SA	75%	25%
7.4-10.3m:	Cobbley/Pebbley, SA	85%	15%
10.3-11.2m:	Cobbley, SA	95%	5%

11.2-12.0m; Bedrock

Dark green, fine grained schistose mafic volcanic. Minor epidote alteration evident from 11.2-11.4m. Also notice increase in white quartz veinlets from (11.5 to 11.6m ~25%). Otherwise quartz veinlets account for usual 5%.

REVERSE CIRCULATION DRILL HOLE LOG

DATE 19 - 09 / 20 - 09 19 86
SHIFT HOURS
____ TO ____
TOTAL HOURS
____
CONTRACT HOURS
____

HOLE NO ORT 11 LOCATION ORT 13
GEOLOGIST D. Garand DRILLER G. Howg BIT NO. B 67939 BIT FOOTAGE 12.0 - 28.8m
MOVE TO HOLE 5:25 - 5:35
DRILL 5:40 - 6:15 (19-09) ; 8:00 - 9:05 (20-09)
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 9:15 - 9:30

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG

SAMPLE NO.: 1, 2, 3, 4, 5, 6, 7, 8, 9

0.0 - 1.3m; Organics
1.3 - 15.8m; Till

Boulders
7.3 - 7.6m
9.4 - 9.6m
12.3 - 12.5m
13.1 - 13.7m

Matrix
1.3 - 2.3m : Fine brown sand
2.3 - 4.6m : Fine grey sand
4.6 - 5.2m ; Grey clayey silt
5.2 - 9.2m ; Fine grey sand - silt
9.2 - 9.3m : Grey clayey silt
9.3 - 10.3m : Fine grey sand - silt
10.3 - 10.9m : Grey clay - (rare clast)
10.9 - 13.7m : Fine grey sand - silt
13.7 - 15.8m : Grey clayey silt

Clasts	S/V	Gr	
1.3 - 2.6m : Pebbley, SA-SR	90%	10%	
2.6 - 5.7m : Cobbley, SA	90%	10%	
5.7 - 6.3m : Cobbley, SA	75%	25%	
6.3 - 7.6m ; Cobbley, SA	90%	10%	
7.6 - 10.3m : Cobbley - Pebbley, SA-SR	85%	15%	
10.3 - 10.9m ; Pebbley	85%	15%	- Very few clasts
10.9 - 13.7m : Cobbley, SA	90%	10%	
13.7 - 15.8m : Cobbley, SA	95%	5%	

15.8 - 16.8m : Bedrock

Dark green, fine grained mafic volc. containing minor white quartz veinlets (<5%) Locally epidotized (<5%). Moderately well developed foliation.

REVERSE CIRCULATION DRILL HOLE LOG

DATE 20-09 1986

SHIFT HOURS

____ TO ____

TOTAL HOURS

CONTRACT HOURS

HOLE NO ORT-12 LOCATION ORT-12

GEOLOGIST J. BABINEAU DRILLER G. HOWG BIT NO. B67939 BIT FOOTAGE 28,8-34,9

MOVE TO HOLE 9:15 - 9:30 B67940 → 0,0 - 6,9

DRILL 9:30 - 11:20

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE 11:30 - 11:40

METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG (METERS)

SAMPLE NO.: 1, 2, 3, 4, 5, 6, 7

0,0 - 0,3 m. = Organics, 0,3 - 11,5 = Till (Coating on fragments)
11,5 - 13,0 = Bedrock

Boulders 3,8 - 4,2 m.
4,7 - 4,8 Mafic Volcanics
6,0 - 6,2 Very Hard
7,1 - 7,3 Intermediate Volcanics
7,4 - 7,7 Felsic Volcanics

Matrix 0,3 - 3,2 m. Fine Sand
3,2 - 3,7 Clay + Silt
3,7 - 6,0 Fine Sand
6,0 - 6,2 Clay + Silt
6,2 - 9,0 Fine + Medium Sand
9,0 - 10,5 Clay + Silt
10,5 - 11,5 Fine Sand

Clasts 0,3 - 3,2 Pebbly, S/V = 60%, GR = 40% SA-SR
3,2 - 7,0 Pebbly, S/V = 80%, GR = 20% SA
7,0 - 7,7 Pebbly, S/V = 70%, GR = 30% SR
7,7 - 9,0 Pebbly, S/V = 80%, GR = 20% SR
9,0 - 11,0 Pebbly, S/V = 95%, GR = 5% SR-SA
11,0 - 11,5 Pebbly, S/V = 80%, GR = 20% SR-SA

Bedrock: Highly Schistose Mafic Volcanics
(Fine grained dark green chloritic schist)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

REVERSE CIRCULATION DRILL HOLE LOG

DATE 20-9 1986

SHIFT HOURS

____ TO ____

TOTAL HOURS

CONTRACT HOURS

HOLE NO ORT-13 LOCATION ORT-11

GEOLOGIST J. BABINEAU DRILLER G. HOWG BIT NO. B87940 BIT FOOTAGE 6,9-19,9 m.

B67941 → 0,0-1,5 m.

MOVE TO HOLE 11:30-11:40

DRILL 11:40-13:30

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE 13:40-14:30

Bit changed at 13,0 m.

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG (METERS)

SAMPLE NO.
1
2
3
4
5
6
7

0,0-2,0 m = Poor recovery (Sand + Gravel ?), 2,0-4,5 = Sand + gravel, 4,5-11,0 = till (coating on clasts), 11,0-11,2 = Free clast Clay + Silt, 11,2-13,8 = till.
13,8-14,5 m. = bedrock

Boulders

1,4-2,0 m Diorite
11,5-11,8

Matrix

2,0-3,2	Brown Sand
3,2-6,4	Grey Sand
6,4-6,7	Grey clay + Silt
6,7-7,5	Grey Sand
7,5-8,5	Fine Grey Sand
8,3-8,8	Grey Clay + Silt
8,8-9,5	Grey Fine Sand
9,5-11,5	Grey Clay + Silt
11,8-13,8	Grey Sand

Clasts

		S/V	GR
2,0-3,2	Pebbly, SR	40%	60%
3,2-6,0	Pebbly, SR	30%	70%
6,0-7,0	Pebbly, SR	50%	50%
7,0-7,5	Pebbly, SR-SA	80%	20%
7,5-8,0	Pebbly, SR-SA	70%	30% → Lot of Carbonate Schist clasts
8,0-8,2	Cobbly, SR-SA	70%	30%
8,2-9,5	Pebbly-Cobbly, SR-SA	80%	20%
9,5-13,0	Pebbly, SR-SA	80%	20%
13,0-13,5	Cobbly-Pebbly, SR-SA	80%	20%

Bedrock : 13,8-14,5 m.

Black to dark grey biotite + Chlorite Schist (Strong Schistosity)
Fine grained (Volcanic or sediment ?)

REVERSE CIRCULATION DRILL HOLE LOG

DATE 20-9 1986
SHIFT HOURS
____ TO ____
TOTAL HOURS
CONTRACT HOURS

HOLE NO ORT-14 LOCATION ORT-10
GEOLOGIST J. BABINEAU DRILLER G. HOWG BIT NO. B67941 BIT FOOTAGE 1,5-18,0m.
MOVE TO HOLE 13:40 - 14:30
DRILL 14:35 - 16:25
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 16:35-16:45

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG (Meters)

1 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1 20

1 2 3 4 5 6 7 8 9

0,0-1,0 m. = Poor Recovery, 1,0-15,3 = till (Coating on clasts observed from 8,0 m.)
15,3-16,5 m. = bedrock

Boulders
2,7-3,0 m. = Sericite schist
4,0-4,2 m. = Felsic volcanics
5,8-6,0 m. = " "
12,0-12,2 m.
12,2-12,5 m. = Mafic Volcanics
14,0-14,2 m. = " "

Matrix
1,0-3,7 m. = Grey Sand
3,7-4,0 m. = Grey Fine Sand
4,2-6,0 m. = Grey Fine to medium Sand
6,0-10,5 m. = Grey very Fine Sand
10,5-11,3 m. = Grey medium Sand
11,3-13,8 m. = Grey Fine Sand
13,8-14,5 m. = Grey Clay + Silt
14,5-15,2 m. = Grey Sand
15,2-15,3 m. = Grey Fine Sand

Clasts	S/V	GR	
1,0-2,7 m. = SR-SA, Pebbly-Cobbly	60%	40%	Few Fe-Carbonate schist
2,7-4,0 m. = SR , Pebbly-Cobbly	60%	40%	
4,2-9,0 m. = SR-SA, Cobbly-Pebbly	70%	30%	
9,0-12,0 m. = SR-SA, Cobbly	60%	40%	
12,5-15,3 m. = SR-SA, Cobbly	80%	20%	

Bedrock: from 15,3 to 16,5 m.
Fine grained, dark green chlorite schist, Strong schistosity, contains ≤2% Fe-carbonate (Probably Mafic Volcanics)

REVERSE CIRCULATION DRILL HOLE LOG

DATE 20-9 1986
21-9-86
SHIFT HOURS
______ TO ______
TOTAL HOURS
______
CONTRACT HOURS
______

HOLE NO ORT-15 LOCATION ORT-9
GEOLOGIST J. BABINEAU DRILLER G. HOWG BIT NO. B67941 BIT FOOTAGE 18,0-32,2m.
MOVE TO HOLE 16:35-16:45 B67942 → 0,0-6,8m.
DRILL 16:45-18:00 (20-9-86) 7:15-8:45 (21-9-86)
MECHANICAL DOWN TIME
DRILLING PROBLEMS 17:40-18:00 Difficulty to retire casing from ground
OTHER
MOVE TO NEXT HOLE 9:00-9:10

bit changed at 14,2m.

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG (Meters)

0,0-19,7m. = Till (coating on clast observed from 7,5m.) Few and small pebbles from 7,5 to 11,0. (In till)
19,7-21,0m. = bedrock

Boulders
4,8-5,2m. = Granitic + Quartz veins.
5,3-5,7m. = Mafic Volcanics
18,6-18,7m. = Medium grained gabbro

Matrix
0,0-7,5m. = Grey Fine Sand
7,5-9,0m. = Grey clay + Silt
9,0-9,2m. = Grey Fine Sand
9,2-12,0m. = Grey Clay + Silt
12,0-16,0m. = Grey Fine Sand
16,0-16,5m. = Grey Clay + Silt
16,5-19,7m. = Grey Fine Sand

Clasts

	S/V	GR	
0,0-3,0m. = SR-SA, Pebbly	60%	40%	Few Fe-carbonate Schist
3,0-4,8m. = SR-SA, Pebbly	30%	70%	
4,8-5,7m. = SR-SA, Cobbly	80%	20%	
5,7-12,0m. = SR , Pebbly	60%	40%	Few clasts from 7,5 to 11,0m.
12,0-16,5m. = SR-SA, Cobbly	60%	40%	
16,5-19,7m. = SR-SA, Pebbly	80%	20%	

Bedrock: from 19,7 to 21,0m.
Fine grained + Dark green chlorite schist, probably mafic volcanics. Contains ≤10% disseminated Fe-carbonate. Few white quartz veinlets.

Depth scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Sample No.: 1 2 3 4 5 6 7 8 9 10 11

REVERSE CIRCULATION DRILL HOLE LOG

DATE 21-9 1986
SHIFT HOURS
____ TO ____
TOTAL HOURS
____
CONTRACT HOURS
____

HOLE NO ORT-16 LOCATION ORT-8
GEOLOGIST J. BABINEAU DRILLER G. HOWG BIT NO. B67942 BIT FOOTAGE 6,8-27,3 m.
MOVE TO HOLE 9:00-9:10
DRILL 9:10-10:30
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 10:40-10:50

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG (Meters)

SAMPLE NO.: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

0,0-1,0m. = Organics, 1,0-19,0 = till (Coating on clasts observed from 3,0m) 19,0-20,5m. = bedrock.

Boulders
9,7-10,0m. = Felsic Volcanic
13,7-14,2m. = Intermediate to Felsic Volcanics

Matrix
1,0-4,0m. = Grey Fine Sand
4,0-5,0m. = Grey Very Fine Sand + Silt
5,0-6,0m. = Grey Fine to medium Sand + bit of silt
6,0-9,5m. = Grey Clay + Silt + Very Fine Sand
9,5-11,0m. = Grey Fine Sand
11,0-18,5m = Grey clay + Silt } Very low clast content.
18,5-19,0m. = Grey clay }

Clasts

	S/V	GR
1,0-4,0m. = SR-SA, Pebbly	60%	40%
4,0-5,8m. = SR-SA, Pebbly	40%	60%
5,8-9,5m. = SR-SA, Pebbly	60%	40%
9,5-13,7m. = SR-SA, Pebbly	80%	20%
13,7-16,0m. = SR-SA, Cobbly	80%	20%
16,0-19,0m. = SR-SA, Pebbly	80%	20%

Bedrock: from 19,0 to 20,5m.
Dark green + Fine grained Chlorite-Sericite Schist (probably Mafic to intermediate Volcanics) Few white quartz Veinlets.

REVERSE CIRCULATION DRILL HOLE LOG

DATE 21-9 1986

HOLE NO ORT-17 LOCATION ORT-17

GEOLOGIST J. BABINEAU DRILLER G. HOWG BIT NO. B67942 BIT FOOTAGE 27,3-40,8m.

B67943 ⟶ 0,0-7,0m.

SHIFT HOURS

TO

TOTAL HOURS

CONTRACT HOURS

MOVE TO HOLE 10:40 - 10:50

DRILL 10:50-13:10

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE 13:20 - 13:30

Bit changed at 13,5m.

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
1				0,0-1,5m. = Poor Recovery, 1,5-19,0 = Till (Coating on clasts observed from 1,5m.), 19,0-20,5 = bedrock
2				
3			1	
4				
5			2	
6				
7			3	
8			4	
9				
10			5	
11				
12			6	
13			7	
14			8	
15				
16			9	
17			10	
18				
19			11	
20				

Boulders

2,0-2,3m. = Gabbro
5,0-5,1m. = Felsic Volcanics
5,5-5,8m. = Mafic Volcanics
16,2-16,5m. = Felsic to Intermediate Volcanics
17,0-17,2m. = Mafic Volcanics

Matrix

1,5-3,5m. = Grey Sand
3,5-4,0m. = Grey clay + Silt
4,0-7,5m. = Grey Fine to medium Sand
7,5-8,0m. = Grey clay + Silt
8,0-9,5m. = Grey Fine Sand
9,5-16,0m. = Grey Clay + Silt (Rare + Small Pebbly clasts)
16,0-18,0m. = Grey Silt + Fine Sand (Rare + Small Pebbly clasts)
18,0-18,3m. = Grey Clay + Silt
18,3-19,0m. = Grey Fine Sand

Clasts

	S/V	GR
1,5-9,0m. = SR, Cobbly	50%	50%
9,0-16,0m. = SR-SA, Pebbly.	70%	30%
16,0-19,0m. = SR-SA, Cobbly.	70%	30%

Bedrock: from 19,0 to 20,5m.

Dark green + Fine grained chlorite + Amphibole (Hornblende?) Schist (Mafic Volcanics) Contains few white Quartz veinlets, possibly chloritoid (Strong schistosity)

REVERSE CIRCULATION DRILL HOLE LOG

DATE 21-9 1986
SHIFT HOURS
______ TO ______
TOTAL HOURS
______
CONTRACT HOURS
______

HOLE NO ORT-18 LOCATION ORT-18
GEOLOGIST J. BABINEAU DRILLER G. HOWG BIT NO. B67943 BIT FOOTAGE 7,0-23,0m.
MOVE TO HOLE 13:20-13:30
DRILL 13:30 - 14:55
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 15:05-15:15

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG (Meters)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

1 2 3 4 5 6 7 8

0,0-2,0m. = Poor Recovery, 2,0-15,0 = till (Coating on clasts observed from 3,0m.). 15,0-16,0 = bedrocke

Boulders

11,8-12,1m. = Felsic to Intermediate Volcanics
12,2-12,3m. = Schistose Mafic Volcanics

Matrix

2,0-4,1m. = Grey Medium Do fine Sand
4,1-5,5m. = Grey Coarse to Medium Sand
5,5-9,0m. = Grey Clay + Silt (Rare Pebbly clasts)
9,0-10,8m. = Grey Fine to medium Sand
10,8-12,0m. = Grey Clay + Silt (Rare Pebbly clasts)
12,0-15,0m. = Grey Fine to medium Sand

Clasts

	S/V	GR
2,0-2,5m. = SR-SA, Cobbly-Pebbly	80%	20%
2,5-4,1m. = SR-SA, Cobbly-Pebbly	50%	50%
4,1-5,5m. = SR, Cobbly-Pebbly	60%	40%
5,5-12,0m. = SR-SA, Pebbly	60%	40%
12,0-13,5m. = SR-SA, Cobbly	70%	30%
13,5-15,0m. = SR-SA, Cobbly	80%	20%

Bedrocke: from 15,0 to 16,0m.

Dark green + Fine grained chlorite + Amphibole Schist (Mafic Volcanics). Contains few white Quartz veinlets, possibly chloritoid (Strong Schistosity).

REVERSE CIRCULATION DRILL HOLE LOG

DATE 21-9 1986

SHIFT HOURS

____ TO ____

TOTAL HOURS

CONTRACT HOURS

HOLE NO ORT-19 LOCATION ORT-19

GEOLOGIST J. BABINEAU DRILLER G. HOWE BIT NO. B67943 BIT FOOTAGE 23,0-37,2 m.

MOVE TO HOLE 15:05-15:15

DRILL 15:15-16:15

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE 16:25-16:30

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG (Meters)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Sample No.: 1 (3,5-9,0), 2 (9,0-10,0), 3 (10,0-12,0), 4 (12,0-13,0)

0,0-1,0 m. = Organics, 1,0-2,0 m. = beige Fine-clast Sand, 2,0-3,5 = Grey clay + Silt, 3,5-13,0 = Till (coating on clasts observed from 8,0 m.). 13,0-14,2 = bedrock.

Boulders

10,0-10,3 m. = Mafic Volcanics

Matrix

3,5-13,0 m. = Grey Fine to medium Sand

Clasts

	S/V	GR
3,5-9,0 m. = SR, Pebbly	70%	30%
9,0-10,3 m. = SR, Cobbly	70%	30%
10,3-11,5 m. = SR, Pebbly	60%	40%
11,5-13,0 m. = SR-SA, Pebbly	70%	30%

Bedrock: From 13,0 to 14,2 m.

Fine grained, dark green chlorite + Amphibole (Hornblende?) Schist (Mafic Volcanic). Contains ≤ 10% disseminated Fe-carbonates, Few white Quartz + Epidote Veinlets

REVERSE CIRCULATION DRILL HOLE LOG

DATE 21-9 1986
SHIFT HOURS
____ TO ____
TOTAL HOURS
____
CONTRACT HOURS
____

HOLE NO ORT-20 LOCATION ORT-20
GEOLOGIST J. BABINEAU DRILLER G. HOWG BIT NO. CB 68334 BIT FOOTAGE 0,0-11,0 m.
MOVE TO HOLE 16:25-16:30
DRILL 16:35-17:20
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 17:30-17:35

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG (Meters)
				0,0-0,7 m. = Poor Recovery, 0,7-10,0 = till (coating on clasts observed from 4,5 m.), 10,0-11,0 = bedrock.
			1	
			2	
			3	
			4	
			5	

Boulders

5,0-5,3 m. = Mafic Volcanic

Matrix

0,7-6,8 m. = Grey Sand
6,8-7,5 m. = Grey Clay + Silt
7,5-9,0 m. = Grey Fine Sand
9,0-9,2 m. = Grey Clay + Silt
9,2-10,0 m. = Grey Fine Sand

Clasts

	S/V	G/R
0,7-4,0 m. = SR, Pebbly	60%	40%
4,0-5,0 m. = SR-SA, Cobbly	60%	40%
5,0-7,5 m. = SR-SA, Pebbly	75%	25%
7,5-10,0 m. = SR-SA, Cobbly	75%	25%

Bedrock: from 10,0 to 11,0 m.

Fine grained, dark green chlorite + amphibole Schist (Mafic Volcanics) containing < 10% disseminated Fe-carbonate, Few Aplite Veinlets.

REVERSE CIRCULATION DRILL HOLE LOG

DATE 21·09 / 22·09 19 86

SHIFT HOURS

______ TO ______

TOTAL HOURS

______

CONTRACT HOURS

______

HOLE NO ORT 21 LOCATION ORT 21

GEOLOGIST D. Garand DRILLER G. Hawig BIT NO. CB 68334 BIT FOOTAGE 11.0-23.0m

MOVE TO HOLE 5:30 - 535

DRILL 5:35 - 6:00 (21·09) ; 7·55 - 8·20 (22·09)

MECHANICAL DOWN TIME

DRILLING PROBLEMS

OTHER

MOVE TO NEXT HOLE 8'25 - 8:35

DEPTH IN METRES	GRAPHIC LOG	INTERVAL	SAMPLE NO.	DESCRIPTIVE LOG
1 – 3			1	
3 – 4.5			2	
4.5 – 6			3	
6 – 7.5			4	
7.5 – 9			5	
9 – 10.5			6	

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 20

0.0 - 10.4m : Till

Boulders

7.4-7.6m : Dioritic

Matrix

0.0-1.0m : Medium grained broun san
1.0-5.8m : Fine grey sand -silt
5.8-6.0m : Grey silty - clay
6.0-7.5m : Fine grey silt
7.5-7.7m : Grey clayey -silt
7.7-10.4m : Fine grey sand - silt

Clasts

		S/V	Gr
0.0-4.6m :	Pebbley, SA	80%	20%
4.6-7.3m :	Pebbley, SA	70%	30%
7.3-10.4m :	Cobbley, SA	60%	40%

10.4 - 12.0m : Bedrock

Fine grained, dark green, chlorite schist metavolcanic containing veinlets of white quartz (≤ 15%) and carbonate (<5%)

REVERSE CIRCULATION DRILL HOLE LOG

DATE 22-09 1986
HOLE NO ORT-22 LOCATION ORT-22
GEOLOGIST J. BABINEAU DRILLER G. HOUDA BIT NO. CB 68334 BIT FOOTAGE 23,0-37,0m.
SHIFT HOURS
____ TO ____
MOVE TO HOLE 8:25-8:35
DRILL 8:35-9:55
TOTAL HOURS
MECHANICAL DOWN TIME
DRILLING PROBLEMS
CONTRACT HOURS
OTHER
MOVE TO NEXT HOLE 10:00-10:10

IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG (Meters)

Sample No.: 1, 2, 3, 4, 5, 6, 7

0,0-1,0m. = Poor Recovery, 1,0-13,0 = till (Coating on clasts observed from 3,0m.). 13,0-14,0m. = bedrock

Boulders
5,1-5,3m. = Epidote rich gabbro
9,1-9,2 m. = Intermediate Volcanics

Matrix
1,0-2,5m. = Grey Sand
2,5-3,8m. = Grey Clay + Silt
3,8-5,0m = Grey Fine to medium Sand
5,0-6,0m. = Grey Clay + Silt
6,0-12,2m. = Grey Fine Sand
12,2-12,7m. = Grey Clay + Silt
12,7-13,0 m. = Grey Fine Sand

Clasts

Clasts	S/V	G.R
1,0-3,0m. = SR, Pebbly	60%	40%
3,0-5,0m. = SR, Cobbly	60%	40%
5,0-9,0m. = SR-SA, Pebbly	60%	40%
9,0-11,2m. = SR-SA, Pebbly	70%	30%
11,2-12,2m. = SR-SA, Cobbly	70%	30%
12,2-12,7m. = SR-SA, Cobbly	80%	20%
12,7-13,0m. = SR-SA, Pebbly	80%	20%

Bedrock: from 13,0 to 14,5m.

Dark green + Fine grained chlorite + black hornblende schist (Mafic Volcanics). Well developped schistosity. Few white quartz + carbonate veinlets

REVERSE CIRCULATION DRILL HOLE LOG

DATE 22-09 1986
SHIFT HOURS
_____ TO _____
TOTAL HOURS
_____
CONTRACT HOURS
_____

HOLE NO ORT-23 LOCATION ORT-23
GEOLOGIST J.BABINEAU DRILLER G. HOWG BIT NO CB 68334 BIT FOOTAGE 37,0-39,5 m
CB 68335 0,0-6,0 m
MOVE TO HOLE 10:00 - 10:10
DRILL 10:10 - 11:30
MECHANICAL DOWN TIME
DRILLING PROBLEMS
OTHER
MOVE TO NEXT HOLE 11:35 - 18:00

bit changed at 2,5 m.
MOVING + REPAIRS : 11:35-18:00

DEPTH IN METRES | GRAPHIC LOG | INTERVAL | SAMPLE NO. | DESCRIPTIVE LOG (Meters)

0,0-0,7 m. = Poor Recovery (Probably Organics), 0,7-7,0 = till, 7,0-8,5 = bedrock.

1 Boulders
0,7-1,0 m. = Mafic Volcanics
4,7-4,8 m = Intermediate Volcanics

2 Matrix
1,0-3,0 m. = Grey Fine to medium Sand
3 3,0-5,0 m. = Grey Clay + Silt
5,0-5,8 m. = Grey Fine Sand
5,8-7,0 m = Grey Clay + Silt

Clasts	S/V	GR	
1,0-3,0 m. = SR-SA, Cobbly	60%	40%	
3,0-7,0 m = SR-SA, Cobbly-Pebbly	70%	30%	(Coating observed from 5,8 m.)

Bedrock: from 7,0 to 8,5 m.
Dark green, fine grained chlorite-hornblende Schist (Mafic Volcanics). Contains some biotite and around 10% of white quartz Veinlets.

1 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

APPENDIX III

LABORATORY SAMPLE LOGS

OVERBURDEN DRILLING MANAGEMENT LIMITED
107-15 CAPELLA COURT, NEPEAN, ONTARIO, CANADA, K2E 7X1
TELEPHONE (613) 226-1771 OR 226-1774

October 21, 1986

ESSO Minerals Canada
153 A Rue Perreault
Val d'Or, Quebec
JOP 2H1

Dear Sir:

Enclosed are our laboratory sample logs and invoice for sample processing for the sample series ORT-86 01-01 to 23-03. The non-magnetic heavy mineral concentrate for this series will be forwarded to X-Ray Assay for analysis on October 22, 1986.

Please advise us of your requirements for the remaining sample fractions. If necessary we will continue to store the fractions for a period of six (6) weeks, at which time we will return or dispose of the fractions as per your instructions.

Should you require any additional information, please do not hesitate to contact us.

Yours truly,

Martha Edwards

for Kevan Elcomb
Laboratory Manager

Att.

KE:lk

OVERBURDEN DRILLING MANAGEMENT LIMITED - LABORATORY SAMPLE LOG

ABBREVIATIONS

CLAST:

SIZE OF CLAST:

- G: GRANULES
- P: PEBBLES
- C: COBBLES
- BL: BOULDER CHIPS
- BK: BEDROCK CHIPS

% CLAST COMPOSITION

V/S	VOLCANICS AND SEDIMENTS
GR	GRANITICS
LS	LIMESTONE
OT	OTHER LITHOLOGIES (REFER TO FOOTNOTES BELOW)
TR	ONLY TRACE PRESENT
NA	NOT APPLICABLE

MATRIX:

S/U	SORTED OR UNSORTED				
SD	SAND	Y	YES FRACTION PRESENT	F:	FINE
ST	SILT	N	FRACTION NOT PRESENT	M:	MEDIUM
CY	CLAY			C:	COARSE

COLOR:

- B: BEIGE
- GY: GREY
- GB: GREY BEIGE
- GN: GREEN
- GG: GREY GREEN
- BN: BROWN
- BK: BLACK
- OC: OCHRE
- PK: PINK
- OE: ORANGE

DESCRIPTION:

- BLD: BOULDER CHIPS
- BDK: BEDROCK CHIPS

ESRT1OCT.WR1

OVERBURDEN DRILLING MANAGEMENT LIMITED

LABORATORY SAMPLE LOG

SAMPLE NO.	WEIGHT (KG.WET)			WEIGHT (GRAMS DRY)					AU		DESCRIPTION											CLASS
						M. I. CONC					CLAST					MATRIX						
	TABLE SPLIT	+10 CHIPS	TABLE FEED	TABLE CONC	M.I. LIGHTS	CONC. TOTAL	NON MAG	MAG	NO. V.G.	CALC PPB	SIZE	%				S/U	SD	ST	CY	COLOR		
												V/S	GR	LS	OT					SD	CY	
ORT-86																						
01-01	10.0	0.1	9.9	214.5	168.9	45.6	34.9	10.7	2	63	P	80	20	NA	NA	U	Y	Y	Y	GY	GB	TILL
-02	4.9	0.0	4.9	135.7	109.2	26.5	21.0	5.5	3	96	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
02-01	11.0	0.2	10.8	319.5	199.2	120.3	51.3	69.0	5	19	C,BK	95	5	NA	NA	U	Y	Y	Y	GN	GN	TILL
03-01	9.9	0.1	9.8	215.1	187.6	27.5	18.2	9.3	5	131	P	80	20	NA	NA	U	Y	Y	Y	GB	B	TILL
-02	10.8	0.1	10.7	181.9	147.3	34.6	24.5	10.1	12	205	P	80	20	NA	NA	U	Y	Y	Y	GY	GY	TILL
-03	8.9	0.2	8.7	105.5	71.1	34.4	25.4	9.0	6	264	P,BL	85	15	NA	NA	U	Y	Y	Y	GY	GY	TILL
04-01	9.3	0.0	9.3	113.7	83.0	30.7	20.9	9.8	6	12	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-02	7.2	0.0	7.2	143.9	113.0	30.9	21.8	9.1	9	67	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-03	9.4	0.0	9.4	143.1	102.2	40.9	25.3	15.6	4	52	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-04	7.5	0.1	7.4	131.0	93.3	37.7	24.2	13.5	6	32	P	95	5	NA	NA	U	Y	Y	Y	GY	GY	TILL
-05	8.8	0.1	8.7	72.5	40.0	32.5	21.5	11.0	0	NA	P	95	5	NA	NA	U	Y	Y	Y	GY	GY	TILL
05-01	9.2	0.0	9.2	140.3	115.9	24.4	15.9	8.5	4	13	TR	NA	NA	NA	D	U	Y	Y	Y	GB	BN	TILL
-02	6.7	0.3	6.4	122.9	104.9	18.0	13.2	4.8	5	31	P	100	TR	NA	D	U	Y	Y	Y	GY	BN	TILL
06-01	6.1	0.0	6.1	97.0	68.4	28.6	20.1	8.5	9	258	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
-02	9.7	0.2	9.5	154.6	122.6	32.0	21.7	10.3	5	485	P	95	5	NA	NA	U	Y	Y	Y	GB	B	TILL
08-01	9.5	0.0	9.5	105.9	71.8	34.1	22.3	11.8	9	502	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-02	5.6	0.0	5.6	113.9	84.3	29.6	23.5	6.1	5	83	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
09-01	6.9	0.0	6.9	106.7	80.0	26.7	18.2	8.5	3	184	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
-02	5.0	0.0	5.0	99.1	80.9	18.2	12.4	5.8	5	129	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	8.0	0.0	8.0	112.1	84.6	27.5	17.8	9.7	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-04	6.5	0.0	6.5	130.2	111.0	19.2	13.6	5.6	4	110	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-05	6.7	0.0	6.7	118.8	100.0	18.8	12.2	6.6	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-06	9.0	0.0	9.0	122.2	91.5	30.7	19.7	11.0	6	334	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-07	8.5	0.0	8.5	150.5	112.1	38.4	26.7	11.7	2	547	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GB	TILL
10-01	6.7	0.0	6.7	114.3	91.1	23.2	16.2	7.0	1	2	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
-02	10.5	0.0	10.5	139.9	107.9	32.0	21.5	10.5	6	30	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	7.8	0.0	7.8	116.4	93.7	22.7	15.6	7.1	5	40	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-04	8.8	0.0	8.8	125.9	98.8	27.1	19.3	7.8	1	1	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-05	8.7	0.1	8.6	119.3	80.0	39.3	29.8	9.5	3	861	G	80	20	NA	NA	U	Y	Y	Y	GB	GB	TILL
-06	9.3	0.1	9.2	155.1	116.1	39.0	29.0	10.0	1	22	G	90	10	NA	NA	U	Y	Y	Y	GB	GB	TILL
-07	8.5	0.1	8.4	133.9	80.1	53.8	42.5	11.3	4	35	G	98	2	NA	NA	U	Y	Y	Y	GB	GB	TILL
11-01	8.1	0.1	8.0	110.7	74.4	36.3	26.8	9.5	4	35	P	60	40	NA	NA	U	Y	Y	Y	GB	GB	TILL
-02	3.9	0.0	3.9	130.4	110.1	20.3	16.0	4.3	1	23	P	70	30	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	9.3	1.6	7.7	109.8	69.9	39.9	29.8	10.1	4	251	P	90	10	NA	NA	U	Y	Y	Y	GB	GB	TILL
-04	6.8	0.1	6.7	69.6	40.0	29.6	21.8	7.8	4	48	P	95	5	NA	NA	U	Y	Y	Y	GB	GB	TILL
-05	8.6	0.1	8.5	143.8	103.3	40.5	28.9	11.6	3	14	P	95	5	NA	NA	U	Y	Y	Y	GB	GB	TILL
-06	5.1	0.1	5.0	124.6	97.7	26.9	21.4	5.5	4	74	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-07	6.3	0.0	6.3	190.4	158.8	31.6	25.6	6.0	1	193	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-08	7.4	0.0	7.4	227.7	178.3	49.4	38.4	11.0	4	51	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-09	9.2	0.0	9.2	194.8	131.8	63.0	49.2	13.8	18	478	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
12-01	7.4	0.0	7.4	157.4	126.2	31.2	22.3	8.9	3	47	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-02	5.9	0.0	5.9	119.4	91.6	27.8	20.2	7.6	5	350	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-03	4.0	0.0	4.0	115.0	91.9	23.1	14.7	8.4	5	204	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-04	7.9	0.0	7.9	136.0	104.9	31.1	22.0	9.1	3	6	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL

ESRT1OCT.WR1

OVERBURDEN DRILLING MANAGEMENT LIMITED

LABORATORY SAMPLE LOG

SAMPLE NO.	WEIGHT (KG.WET)			WEIGHT (GRAMS DRY)					AU		DESCRIPTION											CLASS
						M. I. CONC					CLAST					MATRIX						
	TABLE SPLIT	+10 CHIPS	TABLE FEED	TABLE CONC	M.I. LIGHTS	CONC. TOTAL	NON MAG	MAG	NO. V.G.	CALC PPB	SIZE	%				S/U	SD	ST	CY	COLOR		
												V/S	GR	LS	OT					SD	CY	
ORT-86																						
-05	4.4	0.0	4.4	110.6	85.6	25.0	19.5	5.5	4	34	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-06	8.5	0.0	8.5	191.6	164.5	27.1	20.0	7.1	1	12	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-07	6.8	0.0	6.8	151.8	108.3	43.5	32.4	11.1	3	34	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
13-01	5.7	0.0	5.7	93.1	70.1	23.0	15.6	7.4	6	94	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-02	4.5	0.0	4.5	95.7	78.4	17.3	12.0	5.3	2	66	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-03	8.0	0.0	8.0	126.9	95.7	31.2	21.2	10.0	7	152	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-04	8.2	0.0	8.2	138.8	104.8	34.0	22.3	11.7	5	54	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-05	9.8	0.0	9.8	200.0	159.8	40.2	25.8	14.4	6	39	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-06	8.7	0.0	8.7	141.4	101.1	40.3	30.8	9.5	3	14	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-07	10.9	0.1	10.8	168.6	111.8	56.8	39.1	17.7	35	904	P	85	15	NA	NA	U	Y	Y	Y	GY	GY	TILL
14-01	7.5	0.0	7.5	59.4	30.0	29.4	18.6	10.8	5	76	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-02	8.4	0.0	8.4	60.2	29.4	30.8	17.7	13.1	4	73	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-03	8.9	0.0	8.9	85.1	44.2	40.9	23.6	17.3	6	225	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-04	5.6	0.0	5.6	110.7	84.5	26.2	16.1	10.1	4	223	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-05	9.4	0.2	9.2	96.2	63.9	32.3	20.0	12.3	5	1334	P	75	25	NA	NA	U	Y	Y	Y	GY	GY	TILL
-06	4.8	0.0	4.8	70.0	50.5	19.5	13.5	6.0	5	152	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-07	5.2	0.0	5.2	115.0	91.4	23.6	16.6	7.0	3	141	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-08	10.6	0.1	10.5	180.3	146.6	33.7	25.5	8.2	5	545	P	75	25	NA	NA	U	Y	Y	Y	GY	GY	TILL
-09	8.3	0.0	8.3	181.9	141.8	40.1	29.9	10.2	5	164	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
15-01	9.6	0.0	9.6	151.6	122.6	29.0	17.0	12.0	5	104	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-02	8.1	0.0	8.1	91.1	64.0	27.1	16.2	10.9	3	12	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-03	5.5	0.0	5.5	91.4	64.9	26.5	20.1	6.4	4	16	TR	NA	NA	NA	NA	S	M	N	Y	B	GY	SAND
-04	4.9	0.0	4.9	81.8	58.2	23.6	19.1	4.5	3	21	TR	NA	NA	NA	NA	S	M	N	Y	B	GY	SAND
-05	3.5	0.0	3.5	62.1	43.1	19.0	15.6	3.4	2	66	TR	NA	NA	NA	NA	S	F	N	Y	B	GY	TILL
-06	10.8	0.0	10.8	176.2	120.3	55.9	40.2	15.7	5	31	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-07	9.4	0.0	9.4	128.3	80.5	47.8	35.8	12.0	2	6	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-08	8.6	0.0	8.6	125.5	83.1	42.4	31.8	10.6	3	8	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-09	10.3	0.0	10.3	184.7	70.8	113.9	68.4	45.5	9	284	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-10	8.8	0.0	8.8	169.3	93.7	75.6	55.4	20.2	9	122	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-11	5.4	0.0	5.4	104.9	62.1	42.8	33.1	9.7	2	17	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
16-01	9.5	0.0	9.5	100.2	72.2	28.0	20.5	7.5	4	16	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL

FOOTNOTES:

A GRITTY CLAY LUMPS PRESENT

B SMOOTH CLAY LUMPS PRESENT

C ORGANICS PRESENT

D SAMPLE HIGHLY OXIDIZED

REVIATIONS

NUMBER OF GRAINS:

T: NUMBER FOUND ON SHAKING TABLE
P: NUMBER FOUND AFTER PANNING

THICKNESS:

C: CALCULATED THICKNESS OF GRAIN
M: ACTUAL MEASURED THICKNESS OF GRAIN

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT1OCT.WR1

SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	NUMBER OF GRAINS ABRADED T	P	IRREGULAR T	P	DELICATE T	P	TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
ORT-86													
01-01	Y	25 X 50	8 C		1					1			EST. 5% PYRITE
		75 X 150	22 C		1					1			1% MARCASITE
								TOTAL		2	34.9	63	
-02	Y	50 X 75	13 C		1					1			EST. 20% PYRITE
		75 X 75	15 C		1					1			100 GRAINS ARSENOPYRITE
		75 X 100	18 C		1					1			
								TOTAL		3	21.0	96	
02-01	Y	25 X 25	5 C				2			2			EST. 65% PYRITE
		50 X 50	10 C						1	1			100 GRAINS MARCASITE
		50 X 75	13 C		2					2			
								TOTAL		5	51.3	19	
03-01	Y	25 X 25	5 C		3					3			EST. 7% PYRITE
		50 X 50	10 C		1					1			
		100 X 125	22 C		1					1			
								TOTAL		5	18.2	131	
-02	Y	25 X 25	5 C		1		1		1	3			EST. 15% PYRITE
		25 X 50	8 C		1					1			
		50 X 50	10 C		4		1			5			
		50 X 75	13 C		1					1			
		75 X 75	15 C		1					1			
		100 X 150	25 C		1					1			
								TOTAL		12	24.5	205	
-03	Y	25 X 25	5 C		3					3			EST. 30% PYRITE
		25 X 75	10 C		1					1			30 GRAINS ARSENOPYRITE
		50 X 150	20 C		1					1			
		100 X 200	29 C		1					1			
								TOTAL		6	25.4	264	
04-01	Y	25 X 25	5 C		4					4			NO SULPHIDES
		25 X 50	8 C		2					2			
								TOTAL		6	20.9	12	
-02	Y	25 X 25	5 C		4					4			EST. 1% PYRITE
		25 X 50	8 C		1		1			2			
		50 X 50	10 C		1					1			

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT1OCT.WR1

NUMBER OF GRAINS

SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	ABRADED T	ABRADED P	IRREGULAR T	IRREGULAR P	DELICATE T	DELICATE P	TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
ORT-86													
		50 X 75	13 C		1					1			
		50 X 100	15 C						1	1			
									TOTAL	9	21.8	67	
-03	Y	25 X 25	5 C		1					1			EST. 10% PYRITE
		25 X 50	8 C		1					1			
		50 X 50	10 C		1					1			
		75 X 100	18 C		1					1			
									TOTAL	4	25.3	52	
-04	Y	25 X 25	5 C		3		2			5			EST. 1% PYRITE
		50 X 100	15 C		1					1			
									TOTAL	6	24.2	32	
-05	Y	NO VISIBLE GOLD											EST. 1% PYRITE
05-01	Y	25 X 25	5 C		1				1	2			EST. 5% PYRITE
		25 X 50	8 C		2					2			50 GRAINS ARSENOPYRITE (FINE)
									TOTAL	4	15.9	13	
-02	Y	25 X 25	5 C		2					2			EST. 10% PYRITE
		25 X 50	8 C		1		1			2			40 GRAINS ARSENOPYRITE (FINE)
		50 X 50	10 C		1					1			
									TOTAL	5	13.2	31	
06-01	Y	25 X 25	5 C		2				1	3			EST. 0.25% PYRITE
		50 X 50	10 C		3					3			
		75 X 75	15 C	1						1			
		75 X 100	18 C			1				1			
		125 X 125	25 C			1				1			
									TOTAL	9	20.1	258	
-02	Y	25 X 100	13 C		1					1			EST. 0.5% PYRITE
		50 X 50	10 C		1					1			
		75 X 175	25 C	1						1			
		100 X 125	22 C		1					1			
		100 X 200	29 C			1				1			
									TOTAL	5	21.7	485	
08-01	Y	25 X 25	5 C		2					2			EST. 7% PYRITE

GOLD CLASSIFICATION

BLE GOLD FROM SHAKING TABLE AND PANNING

ESRT1OCT.WR1 NUMBER OF GRAINS

				ABRADED		IRREGULAR		DELICATE			NON MAG	CALC V.G. ASSAY	
SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	T	P	T	P	T	P	TOTAL	GMS	PPB	REMARKS
ORT-86													
		50 X 75	13 C		1					1			
		50 X 100	15 C	1	2					3			
		75 X 100	18 C	1						1			
		100 X 150	25 C		1					1			
		150 X 150	29 C	1						1			
									TOTAL	9	22.3	502	
-02	Y	25 X 75	10 C		1					1			EST. 2% PYRITE
		50 X 50	10 C		2					2			
		50 X 75	13 C		1					1			
		75 X 100	18 C		1					1			
									TOTAL	5	23.5	83	
9-01	Y	25 X 50	8 C		1					1			EST. 0.25% PYRITE
		50 X 75	13 C				1			1			
		100 X 150	25 C			1				1			
									TOTAL	3	18.2	184	
-02	Y	25 X 25	5 C		4					4			NO SULPHIDES
		75 X 125	20 C		1					1			
									TOTAL	5	12.4	129	
-03	Y	NO VISIBLE GOLD											NO SULPHIDES
-04	Y	25 X 25	5 C		1					1			EST. 0.5% PYRITE
		50 X 50	10 C		1					1			
		50 X 100	15 C		1					1			
		75 X 75	15 C		1					1			
									TOTAL	4	13.6	110	
-05	Y	NO VISIBLE GOLD											EST. 3% PYRITE
-06	Y	25 X 25	5 C		3					3			EST. 5% PYRITE
		25 X 50	8 C		1					1			
		50 X 50	10 C		1					1			
		125 X 200	31 C		1					1			
									TOTAL	6	19.7	334	
-07	Y	75 X 100	18 C		1					1			EST. 5% PYRITE
		125 X 300	40 C		1					1			

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT10CT.WR1 NUMBER OF GRAINS

SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	ABRADED		IRREGULAR		DELICATE		TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
				T	P	T	P	T	P				
ORT-86													
								TOTAL		2	26.7	547	
10-01	Y	25 X 25	5 C		1					1			EST. 35 GRAINS PYRITE
								TOTAL		1	16.2	2	
-02	Y	25 X 25	5 C		2				1	3			EST. 30 GRAINS PYRITE
		25 X 75	10 C		1					1			
		50 X 50	10 C		2					2			
								TOTAL		6	21.5	30	
-03	Y	25 X 50	8 C		3					3			EST. 0.25% PYRITE
		50 X 50	10 C		2					2			
								TOTAL		5	15.6	40	
-04	Y	25 X 25	5 C		1					1			EST. 1% PYRITE
								TOTAL		1	19.3	1	
-05	Y	25 X 50	8 C		1					1			EST. 5% PYRITE
		75 X 75	15 C		1					1			
		200 X 325	48 C			1				1			
								TOTAL		3	29.8	861	
-06	Y	75 X 75	15 C		1					1			EST. 10% PYRITE
								TOTAL		1	29.0	22	
-07	Y	25 X 25	5 C		1					1			EST. 15% PYRITE
		50 X 50	10 C						1	1			
		50 X 100	15 C		1					1			
		75 X 75	15 C				1			1			
								TOTAL		4	42.5	35	
11-01	Y	25 X 25	5 C						1	1			EST. 10% PYRITE 200 GRAINS MARCASITE
		25 X 50	8 C				1			1			
		50 X 50	10 C						1	1			
		50 X 100	15 C	1						1			
								TOTAL		4	26.8	35	
-02	Y	50 X 75	13 C		1					1			EST. 3% PYRITE

GOLD CLASSIFICATION
==============
VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT1OCT.WR1 NUMBER OF GRAINS

SAMPLE #	PANNED	DIAMETER	THICKNESS	ABRADED		IRREGULAR		DELICATE		TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
	Y/N			T	P	T	P	T	P				
ORT-86													
									TOTAL	1	16.0	23	
-03	Y	25 X 25	5 C		1					1			EST. 20% PYRITE
		50 X 125	18 C		1					1			
		75 X 125	20 C		1					1			
		100 X 200	29 C	1						1			
									TOTAL	4	29.8	251	
-04	Y	25 X 25	5 C		1					1			EST. 25% PYRITE
		50 X 50	10 C		2					2			
		75 X 75	15 C		1					1			
									TOTAL	4	21.8	48	
05	Y	25 X 25	5 C		1					1			EST. 20% PYRITE
		50 X 50	10 C		2					2			
									TOTAL	3	28.9	14	
-06	Y	25 X 25	5 C		3					3			EST. 5% PYRITE
		100 X 100	20 C		1					1			
									TOTAL	4	21.4	74	
-07	Y	150 X 150	29 C	1						1			EST. 1% PYRITE
													30 PELLETS MARCASITE
									TOTAL	1	25.6	193	
-08	Y	25 X 50	8 C						1	1			EST. 15% PYRITE
		25 X 75	10 C		1					1			
		50 X 50	10 C		1					1			
		75 X 125	20 C		1					1			
									TOTAL	4	38.4	51	
-09	Y	25 X 25	5 C		2					2			EST. 15% PYRITE
		25 X 50	8 C		1					1			
		25 X 75	10 C		1					1			
		50 X 50	10 C		6				2	8			
		50 X 75	13 C		2					2			
		50 X 100	15 C		1					1			
		100 X 125	22 C	1	1					2			
		125 X 325	42 C	1						1			
									TOTAL	18	49.2	478	

GOLD CLASSIFICATION
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VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT1OCT.WR1 NUMBER OF GRAINS

SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	ABRADED T	ABRADED P	IRREGULAR T	IRREGULAR P	DELICATE T	DELICATE P	TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
ORT-86													
12-01	Y	25 X 25	5 C		1					1			EST. 20 GRAINS PYRITE
		50 X 75	13 C		1					1			
		50 X 100	15 C		1					1			
									TOTAL	3	22.3	47	
-02	Y	25 X 25	5 C		1					1			EST. 10% PYRITE
		25 X 50	8 C		1					1			
		75 X 100	18 C		2					2			
		125 X 175	29 C	1						1			
									TOTAL	5	20.2	350	
-03	Y	25 X 25	5 C		1					1			EST. 10% PYRITE
		25 X 125	15 C		1					1			
		50 X 50	10 C						1	1			
		50 X 100	15 C		1					1			
		100 X 100	20 C		1					1			
									TOTAL	5	14.7	204	
-04	Y	25 X 25	5 C		2					2			EST. 3% PYRITE
		25 X 50	8 C		1					1			
									TOTAL	3	22.0	6	
-05	Y	25 X 50	8 C		1					1			EST. 1% PYRITE
		50 X 50	10 C		2					2			
		50 X 100	15 C		1					1			
									TOTAL	4	32.4	34	
-06	Y	50 X 50	10 C		1					1			EST. 5% PYRITE
									TOTAL	1	15.6	12	
-07	Y	25 X 25	5 C		1					1			EST. 25% PYRITE
		50 X 50	10 C		1		1			2			
									TOTAL	3	12.0	34	
13-01	Y	25 X 25	5 C		1					1			NO SULFHIDES
		50 X 50	10 C		3					3			
		50 X 75	13 C		1					1			
		75 X 100	18 C		1					1			
									TOTAL	6	21.2	94	

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT1OCT.WR1 NUMBER OF GRAINS

SAMPLE #	PANNED			ABRADED		IRREGULAR		DELICATE			NON MAG	CALC V.G. ASSAY	
	Y/N	DIAMETER	THICKNESS	T	P	T	P	T	P	TOTAL	GMS	PPB	REMARKS
ORT-86													
-02	Y	50 X 50	10 C		1					1			EST. 15 GRAINS PYRITE
		75 X 125	20 C	1						1			
								TOTAL		2	25.8	66	
-03	Y	25 X 25	5 C		2					2			EST. 7% PYRITE
		50 X 50	10 C		2					2			
		75 X 75	15 C		1					1			
		75 X 125	20 C	1						1			
		100 X 125	22 C		1					1			
								TOTAL		7	30.8	152	
-04	Y	25 X 25	5 C		1					1			EST. 10% PYRITE
		50 X 50	10 C		3					3			
		100 X 100	20 C		1					1			
								TOTAL		5	39.1	54	
-05	Y	25 X 25	5 C		2				1	3			EST 15% PYRITE
		25 X 50	8 C		1					1			
		50 X 50	10 C		1					1			
		50 X 75	13 C		1					1			
								TOTAL		6	18.6	39	
-06		25 X 25	5 C		2					2			EST. 10% PYRITE
		50 X 75	13 C		1					1			
								TOTAL		3	30.8	14	
-07	Y	25 X 25	5 C		7					7			EST. 7% PYRITE
		25 X 50	8 C		6				1	7			
		25 X 75	10 C		2					2			
		25 X 125	15 C		1					1			
		50 X 50	10 C		2					2			
		50 X 75	13 C		3					3			
		50 X 125	18 C		2					2			
		75 X 75	15 C		2					2			
		75 X 100	18 C		3					3			
		75 X 125	20 C		2					2			
		100 X 175	27 C		1					1			
		150 X 150	29 C	1						1			
		150 X 175	31 C		1					1			
		175 X 175	34 C		1					1			

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT1OCT.WR1 NUMBER OF GRAINS

				ABRADED		IRREGULAR		DELICATE			NON MAG	CALC V.G. ASSAY	
SAMPLE #	FANNED Y/N	DIAMETER	THICKNESS	T	P	T	P	T	P	TOTAL	GMS	PPB	REMARKS
ORT-86													
									TOTAL	35	39.1	904	
14-01	Y	25 X 25	5 C		1					1			EST 1% PYRITE
		50 X 50	10 C		2					2			
		50 X 75	13 C		1					1			
		50 X 100	15 C		1					1			
									TOTAL	5	18.6	76	
-02	Y	25 X 50	8 C		1					1			EST. 0.5% PYRITE
		50 X 50	10 C		1					1			
		50 X 75	13 C				1			1			
		50 X 100	15 C		1					1			
									TOTAL	4	17.7	73	
-03	Y	25 X 25	5 C		1					1			EST. 0.5% PYRITE
		50 X 75	13 C		1					1			
		75 X 75	15 C		2					2			
		75 X 125	20 C	1						1			
		75 X 150	22 C	1						1			
									TOTAL	6	23.6	225	
-04	Y	25 X 25	5 C		2					2			EST. 0.25% PYRITE
		50 X 100	15 C		1					1			
		100 X 150	25 C	1						1			
									TOTAL	4	16.1	223	
-05	Y	25 X 25	5 C		1					1			EST. 0.25% PYRITE
		25 X 50	8 C		1					1			
		75 X 75	15 C				1			1			
		75 X 100	18 C						1	1			
		225 X 300	48 C	1						1			
									TOTAL	5	20.0	1334	
-06	Y	25 X 50	8 C		1				1	2			EST. 7% PYRITE
		50 X 50	10 C		2					2			
		75 X 125	20 C		1					1			
									TOTAL	5	13.5	152	
-07	Y	25 X 25	5 C		1					1			EST. 7% PYRITE
		50 X 50	10 C		1					1			
		100 X 125	22 C	1						1			

CLASSIFICATION
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VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT1OCT.WR1 NUMBER OF GRAINS

SAMPLE #	PANNED			ABRADED		IRREGULAR		DELICATE			NON	CALC V.G.	
				========		=========		========			MAG	ASSAY	
	Y/N	DIAMETER	THICKNESS	T	P	T	P	T	P	TOTAL	GMS	PPB	REMARKS
ORT-86													
									TOTAL	3	16.6	141	
-08	Y	25 X 25	5 C		1		1			2			EST. 1% PYRITE
		25 X 50	8 C		1					1			
		50 X 50	10 C		1					1			
		100 X 325	40 C	1						1			
									TOTAL	5	25.5	545	
-09	Y	50 X 75	13 C		2					2			EST. 3% PYRITE
		75 X 100	18 C		1		1			2			
		100 X 125	22 C		1					1			
									TOTAL	5	29.9	164	
15-01	Y	25 X 25	5 C		3					3			EST. 1% PYRITE
		50 X 50	10 C		1					1			
		75 X 125	20 C		1					1			
									TOTAL	5	17.0	104	
-02	Y	25 X 25	5 C		1					1			EST. 1% PYRITE
		25 X 50	8 C		1				1	2			
									TOTAL	3	16.2	12	
-03	Y	25 X 25	5 C		2					2			EST. 1% PYRITE
		25 X 50	8 C		1					1			
		50 X 50	10 C		1					1			
									TOTAL	4	20.1	16	
-04	Y	25 X 25	5 C		1					1			EST. 0.25% PYRITE
		50 X 50	10 C		2					2			
									TOTAL	3	19.1	21	
-05	Y	25 X 25	5 C						1	1			EST. 0.25% PYRITE
		75 X 100	18 C	1						1			
									TOTAL	2	15.6	66	
-06	Y	25 X 25	5 C				1			1			EST. 7% PYRITE
		50 X 50	10 C		3					3			
		50 X 100	15 C	1						1			

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT10CT.WR1 NUMBER OF GRAINS

				ABRADED		IRREGULAR		DELICATE			NON	CALC V.G.	
SAMPLE #	PANNED										MAG	ASSAY	
	Y/N	DIAMETER	THICKNESS	T	P	T	P	T	P	TOTAL	GMS	PPB	REMARKS
ORT-86													
									TOTAL	5	40.2	31	
-07	Y	25 X 25	5 C		1					1			EST. 5% PYRITE
		50 X 50	10 C		1					1			
									TOTAL	2	35.8	6	
-08	Y	25 X 25	5 C		1		1			2			EST. 5% PYRITE
		50 X 50	10 C		1					1			
									TOTAL	3	31.8	8	
-09	Y	25 X 25	5 C		1					1			EST. 15% PYRITE
		50 X 50	10 C		3		1			4			
		50 X 75	13 C		1					1			
		50 X 100	15 C		1					1			
		100 X 225	31 C	1						1			
		150 X 250	38 C	1						1			
									TOTAL	9	68.4	284	
-10	Y	25 X 25	5 C		1					1			EST. 20% PYRITE
		50 X 50	10 C		3					3			
		50 X 75	13 C		1					1			
		75 X 75	15 C	1						1			
		75 X 125	20 C		2					2			
		75 X 150	22 C		1					1			
									TOTAL	9	55.4	122	
-11	Y	50 X 50	10 C		1					1			EST. 1% PYIRTE
		50 X 75	13 C		1					1			
									TOTAL	2	33.1	17	
16-01	Y	25 X 25	5 C		1		1			2			EST. 0.5% PYRITE
		25 X 50	8 C		1					1			20 GRAINS MARCASITE
		50 X 50	10 C		1					1			
									TOTAL	4	20.5	16	

OVERBURDEN DRILLING MANAGEMENT LIMITED - LABORATORY SAMPLE LOG

ABBREVIATIONS

CLAST:

SIZE OF CLAST:

G: GRANULES
P: PEBBLES
C: COBBLES
BL: BOULDER CHIPS
BK: BEDROCK CHIPS

% CLAST COMPOSITION

V/S VOLCANICS AND SEDIMENTS
GR GRANITICS
LS LIMESTONE
OT OTHER LITHOLOGIES (REFER TO FOOTNOTES BELOW)
TR ONLY TRACE PRESENT
NA NOT APPLICABLE

MATRIX:

S/U SORTED OR UNSORTED
SD SAND ¦ Y YES FRACTION PRESENT ¦ F: FINE
ST SILT ¦ N FRACTION NOT PRESENT ¦ M: MEDIUM
CY CLAY ¦ ¦ C: COARSE

COLOR:

B: BEIGE
GY: GREY
GB: GREY BEIGE
GN: GREEN
GG: GREY GREEN
BN: BROWN
BK: BLACK
OC: OCHRE
PK: PINK
OE: ORANGE

DESCRIPTION:

BLD: BOULDER CHIPS
BDK: BEDROCK CHIPS

ESRT20CT.WR1

OVERBURDEN DRILLING MANAGEMENT LIMITED

LABORATORY SAMPLE LOG

SAMPLE NO.	WEIGHT (KG.WET)			WEIGHT (GRAMS DRY)					AU		DESCRIPTION											CLASS
						M. I. CONC					CLAST					MATRIX						
	TABLE SPLIT	+10 CHIPS	TABLE FEED	TABLE CONC	M.I. LIGHTS	CONC. TOTAL	NON MAG	MAG	NO. V.G.	CALC PPB	SIZE	%				S/U	SD	ST	CY	COLOR		
												V/S	GR	LS	OT					SD	CY	
ORT-86																						
16-02	7.0	0.0	7.0	125.9	87.5	38.4	28.1	10.3	3	650	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	4.6	0.0	4.6	75.6	54.8	20.8	16.7	4.1	2	3	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-04	4.4	0.0	4.4	57.0	37.4	19.6	15.7	3.9	2	7	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-05	6.2	0.0	6.2	73.8	43.9	29.9	23.7	6.2	6	230	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-06	5.3	0.0	5.3	76.2	49.7	26.5	21.8	4.7	1	9	TR	NA	NA	NA	NA	S	M	N	Y	GB	GY	SAND
-07	6.9	0.0	6.9	190.4	170.3	20.1	15.0	5.1	3	57	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-08	4.2	0.0	4.2	181.7	164.6	17.1	13.9	3.2	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-09	6.9	0.0	6.9	207.2	171.5	35.7	28.7	7.0	4	42	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-10	5.6	0.0	5.6	78.8	43.8	35.0	28.5	6.5	5	329	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-11	4.3	0.0	4.3	107.8	77.9	29.9	22.4	7.5	3	50	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
17-01	6.4	0.0	6.4	92.9	61.2	31.7	24.0	7.7	2	2	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-02	4.0	0.0	4.0	93.8	72.6	21.2	15.8	5.4	1	12	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-03	7.1	0.0	7.1	112.8	73.1	39.7	29.1	10.6	2	23	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-04	6.2	0.0	6.2	104.6	65.8	38.8	25.8	13.0	2	120	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-05	6.9	0.0	6.9	89.8	53.1	36.7	27.1	9.6	2	2	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-06	3.0	0.0	3.0	47.4	27.8	19.6	14.7	4.9	2	198	TR	NA	NA	NA	NA	S	F	N	Y	GB	GY	SAND
-07	2.9	0.0	2.9	50.4	35.1	15.3	12.6	2.7	2	45	TR	NA	NA	NA	NA	S	F	N	Y	GB	GY	SAND
-08	7.6	0.0	7.6	128.0	73.8	54.2	37.9	16.3	4	232	TR	NA	NA	NA	NA	S	F	N	Y	GB	GY	SAND
-09	5.4	0.0	5.4	78.2	46.3	31.9	23.5	8.4	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-10	6.5	0.0	6.5	166.6	131.6	35.0	26.2	8.8	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
-11	6.7	0.0	6.7	179.3	138.3	41.0	30.5	10.5	1	6	TR	NA	NA	NA	NA	U	Y	Y	Y	GY	GY	TILL
18-01	8.2	0.0	8.2	144.9	108.1	36.8	26.3	10.5	2	64	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-02	2.5	0.0	2.5	105.7	90.5	15.2	11.9	3.3	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-03	3.5	0.0	3.5	121.4	103.4	18.0	14.0	4.0	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-04	3.7	0.0	3.7	107.3	88.6	18.7	14.7	4.0	0	NA	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-05	8.3	0.0	8.3	156.6	121.3	35.3	25.9	9.4	1	25	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-06	4.8	0.0	4.8	182.8	150.4	32.4	27.6	4.8	2	38	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL
-07	9.0	0.1	8.9	157.9	116.3	41.6	28.7	12.9	2	2	P	90	10	NA	NA	U	Y	Y	Y	GB	GY	TILL
-08	8.4	0.0	8.4	136.0	95.6	40.4	27.0	13.4	7	2303	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
19-01	9.3	0.0	9.3	192.2	139.1	53.1	38.7	14.4	9	410	P	50	50	NA	NA	U	Y	Y	Y	GB	GB	TILL
-02	7.8	0.0	7.8	194.7	150.7	44.0	31.3	12.7	7	394	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	7.5	0.0	7.5	158.0	112.3	45.7	32.7	13.0	4	49	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-04	8.6	0.0	8.6	196.7	156.9	39.8	27.9	11.9	2	61	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
20-01	7.6	0.0	7.6	165.9	129.2	36.7	25.8	10.9	7	20	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
-02	4.3	0.0	4.3	132.7	109.5	23.2	16.7	6.5	2	1727	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	5.2	0.0	5.2	136.1	98.4	37.7	26.5	11.2	2	45	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-04	8.3	0.0	8.3	155.9	109.0	46.9	32.0	14.9	1	12	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-05	5.7	0.0	5.7	127.2	102.1	25.1	17.7	7.4	4	286	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
21-01	7.5	0.0	7.5	144.0	110.5	33.5	22.4	11.1	4	35	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
-02	6.8	0.0	6.8	131.1	96.6	34.5	24.2	10.3	3	122	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	8.7	0.0	8.7	180.7	146.5	34.2	21.0	13.2	3	82	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-04	9.3	0.0	9.3	125.4	89.4	36.0	23.0	13.0	9	231	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-05	7.4	0.0	7.4	153.9	119.3	34.6	22.6	12.0	6	692	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-06	8.3	0.0	8.3	187.6	136.1	51.5	26.9	24.6	1	3	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL

ESRT2OCT.WR1

OVERBURDEN DRILLING MANAGEMENT LIMITED

LABORATORY SAMPLE LOG

SAMPLE NO.	WEIGHT (KG.WET)			WEIGHT (GRAMS DRY)					AU		DESCRIPTION											CLASS
						M. I. CONC					CLAST					MATRIX						
	TABLE SPLIT	+10 CHIPS	TABLE FEED	TABLE CONC	M.I. LIGHTS	CONC. TOTAL	NON MAG	MAG	NO. V.G.	CALC PPB	SIZE	% V/S	GR	LS	OT	S/U	SD	ST	CY	COLOR SD	CY	
ORT-86																						
22-01	8.5	0.0	8.5	169.8	142.5	27.3	17.7	9.6	1	11	TR	NA	NA	NA	NA	U	Y	Y	Y	B	B	TILL
-02	4.4	0.0	4.4	161.1	127.9	33.2	26.7	6.5	2	10	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	8.9	0.0	8.9	174.3	123.9	50.4	36.3	14.1	4	22	P	85	15	NA	NA	U	Y	Y	Y	GB	GB	TILL
-04	8.0	0.0	8.0	203.6	160.3	43.3	30.3	13.0	3	2	P	80	20	NA	NA	U	Y	Y	Y	GB	GB	TILL
-05	8.3	0.2	8.1	163.1	107.2	55.9	41.8	14.1	1	1	P	75	25	NA	NA	U	Y	Y	Y	GG	GG	TILL
-06	8.3	0.1	8.2	179.7	123.9	55.8	43.2	12.6	4	18	P	75	25	NA	NA	U	Y	Y	Y	GG	GG	TILL
-07	8.7	0.2	8.5	177.7	109.9	67.8	55.8	12.0	2	1	P	75	25	NA	NA	U	Y	Y	Y	GB	GB	TILL
23-01	9.2	0.1	9.1	138.4	95.0	43.4	34.0	9.4	5	67	P	75	25	NA	NA	U	Y	Y	Y	GB	GB	TILL
-02	8.0	0.1	7.9	110.5	65.4	45.1	34.6	10.5	6	915	P	75	25	NA	NA	U	Y	Y	Y	GB	GB	TILL
-03	9.2	0.1	9.1	100.8	70.6	30.2	25.1	5.1	2	33	TR	NA	NA	NA	NA	U	Y	Y	Y	GB	GY	TILL

NOTES:

A GRITTY CLAY LUMPS PRESENT

B SMOOTH CLAY LUMPS PRESENT

C ORGANICS PRESENT

D SAMPLE HIGHLY OXIDIZED

ABBREVIATIONS

NUMBER OF GRAINS:

T: NUMBER FOUND ON SHAKING TABLE

P: NUMBER FOUND AFTER PANNING

THICKNESS:

C: CALCULATED THICKNESS OF GRAIN

M: ACTUAL MEASURED THICKNESS OF GRAIN

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT2OCT.WR1

NUMBER OF GRAINS

SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	ABRADED		IRREGULAR		DELICATE		TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
				T	P	T	P	T	P				
ORT-86													
16-02	Y	50 X 100	15 C		1					1			EST. 10% PYRITE
		150 X 175	31 C	1						1			
		175 X 225	38 C		1					1			
									TOTAL	3	28.1	650	
-03	Y	25 X 25	5 C		2					2			EST. 1% PYRITE
									TOTAL	2	16.7	3	
-04	Y	25 X 25	5 C		1					1			EST. 5% PYRITE
		25 X 50	8 C		1					1			
									TOTAL	2	15.7	7	
-05	Y	25 X 25	5 C		1				1	2			EST. 10% PYRITE
		50 X 75	13 C		1					1			
		75 X 75	15 C		1					1			
		75 X 125	20 C	1						1			
		75 X 175	25 C	1						1			
									TOTAL	6	23.7	230	
-06	Y	50 X 50	10 C		1					1			EST. 5% PYRITE
									TOTAL	1	21.8	9	
-07	Y	25 X 25	5 C				1			1			EST. 2% PYRITE
		50 X 50	10 C		1					1			
		75 X 75	15 C		1					1			
									TOTAL	3	15.0	57	
-08	Y	NO VISIBLE GOLD											EST. 7% PYRITE
-09	Y	25 X 25	5 C		1					1			EST. 2% PYRITE
		25 X 50	8 C		1		1			2			EST. 7 GRAINS MARCASITE
		75 X 100	18 C	1						1			
									TOTAL	4	28.7	42	
-10	Y	25 X 25	5 C		2					2			EST. 2% PYRITE
		50 X 50	10 C		1					1			
		125 X 125	25 C		1					1			
		150 X 175	31 C	1						1			
									TOTAL	5	28.5	329	

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GOLD CLASSIFICATION
===================
VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT20CT.WR1                      NUMBER OF GRAINS

                                  ABRADED   IRREGULAR  DELICATE       NON    CALC V.G.
SAMPLE # PANNED                   ========  =========  ========       MAG     ASSAY
          Y/N    DIAMETER   THICKNESS   T    P     T    P     T    P TOTAL GMS      PPB    REMARKS

 ORT-86

   -11    Y      50 X  75      13 C         3                         3                  EST. 5% PYRITE
                                                                 ___________________
                                                           TOTAL  3   22.4       50

  17-01   Y      25 X  25       5 C         1          1              2                  EST. 1% PYRITE
                                                                 ___________________
                                                           TOTAL  2   24.0        2

   -02    Y      50 X  50      10 C                    1              1                  EST. 3% PYRITE
                                                                 ___________________
                                                           TOTAL  1   15.8       12

   -03    Y      25 X  25       5 C                    1              1                  EST. 20% PYRITE
                 75 X  75      15 C         1                         1
                                                                 ___________________
                                                           TOTAL  2   29.1       23

   -04    Y      50 X  50      10 C         1                         1                  EST. 7% PYRITE
                 75 X 175      25 C    1                              1
                                                                 ___________________
                                                           TOTAL  2   25.8      120

   -05    Y      25 X  25       5 C         1          1              2                  EST. 10% PYRITE
                                                                 ___________________
                                                           TOTAL  2   27.1        2

   -06    Y      25 X  25       5 C         1                         1                  EST. 10% PYRITE
                100 X 150      25 C    1                              1
                                                                 ___________________
                                                           TOTAL  2   14.7      198

   -07    Y      50 X  50      10 C         1                         1                  EST. 3% PYRITE
                 50 X  75      13 C         1                         1
                                                                 ___________________
                                                           TOTAL  2   12.6       45

   -08    Y      25 X  25       5 C         1          1              2                  EST. 5% PYRITE
                 75 X 100      18 C         1                         1
                125 X 225      34 C    1                              1
                                                                 ___________________
                                                           TOTAL  4   37.9      232

   -09    N   NO VISIBLE GOLD                                                            EST. 15% PYRITE

   -10    N   NO VISIBLE GOLD                                                            EST. 10% PYRITE
```

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT20CT.WR1 NUMBER OF GRAINS

SAMPLE #	PANNED			ABRADED		IRREGULAR		DELICATE			NON MAG	CALC V.G. ASSAY	
	Y/N	DIAMETER	THICKNESS	T	P	T	P	T	P	TOTAL	GMS	PPB	REMARKS
ORT-86													
-11	Y	50 X 50	10 C		1					1			EST. 15% PYRITE 5 GRAINS ARSENOPYRITE
									TOTAL	1	30.5	6	
18-01	Y	50 X 50	10 C		1					1			EST. 15% PYRITE
		100 X 100	20 C	1						1			
									TOTAL	2	26.3	64	
-02	N	NO VISIBLE GOLD											EST. 10% PYRITE
-03	N	NO VISIBLE GOLD											EST. 7% PYRITE
-04	N	NO VISIBLE GOLD											EST. 3% PYRITE
-05	Y	75 X 75	15 C		1					1			EST. 3% PYRITE
									TOTAL	1	25.9	25	
-06	Y	25 X 25	5 C		1					1			EST. 3% PYRITE
		75 X 100	18 C		1					1			7 GRAINS NATIVE COPPER (FINE)
									TOTAL	2	27.6	38	
-07	Y	25 X 25	5 C		1		1			2			EST. 15% PYRITE
									TOTAL	2	28.7	2	
-08	Y	25 X 50	8 C		2					2			EST. 10% PYRITE
		50 X 50	10 C		1					1			1 GRAIN GALENA
		50 X 100	15 C		1					1			
		75 X 75	15 C		1					1			
		125 X 150	27 C		1					1			
		200 X 350	100 M	1						1			
									TOTAL	7	27.0	2303	
19-01	Y	25 X 50	8 C	1						1			EST. 20% PYRITE
		50 X 50	10 C	1	2					3			
		50 X 100	15 C		1					1			
		75 X 150	22 C			1				1			
		100 X 150	25 C	1						1			
		125 X 125	25 C				1			1			
		125 X 200	31 C	1						1			
									TOTAL	9	37.7	410	

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT20CT.WR1

SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	NUMBER OF GRAINS ABRADED T	ABRADED P	IRREGULAR T	IRREGULAR P	DELICATE T	DELICATE P	TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
ORT-86													
-02	Y	25 X 25	5 C		1					1			EST. 20% PYRITE
		50 X 50	10 C		1					1			
		50 X 75	13 C		1					1			
		75 X 100	18 C		1					1			
		75 X 125	20 C	1	1					2			
		125 X 225	34 C			1				1			
								TOTAL		7	31.3	394	
-03	Y	25 X 25	5 C		1					1			EST. 15% PYRITE
		50 X 50	10 C		1					1			
		50 X 75	13 C		1					1			
		75 X 100	18 C			1				1			
								TOTAL		4	32.7	49	
-04	Y	50 X 50	10 C		1					1			EST. 20% PYRITE
		75 X 125	20 C		1					1			
								TOTAL		2	27.9	61	
20-01	Y	25 X 25	5 C		4				1	5			EST. 5% PYRITE
		50 X 50	10 C		2					2			
								TOTAL		7	25.8	20	
-02	Y	50 X 75	13 C						1	1			EST. 10% PYRITE
		250 X 300	50 C			1				1			
								TOTAL		2	16.7	1727	
-03	Y	50 X 50	10 C		1					1			EST. 20% PYRITE
		75 X 100	18 C	1						1			
								TOTAL		2	26.5	45	
-04	Y	50 X 75	13 C		1					1			EST. 15% PYRITE
								TOTAL		1	32.0	12	
-05	Y	25 X 25	5 C		2					2			EST. 10% PYRITE
		75 X 150	22 C	1						1			
		100 X 150	25 C		1					1			
								TOTAL		4	17.7	286	
21-01	Y	25 X 25	5 C		1				1	2			EST. 5% PYRITE

GOLD CLASSIFICATION

VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT20CT.WR1 NUMBER OF GRAINS

SAMPLE #	PANNED Y/N	DIAMETER	THICKNESS	ABRADED T	ABRADED P	IRREGULAR T	IRREGULAR P	DELICATE T	DELICATE P	TOTAL	NON MAG GMS	CALC V.G. ASSAY PPB	REMARKS
ORT-86													
		50 X 75	13 C		2					2			
									TOTAL	4	22.4	35	
-02	Y	25 X 25	5 C		2					2			EST. 20% PYRITE
		125 X 125	25 C	1						1			
									TOTAL	3	24.2	122	
-03	Y	25 X 25	5 C		1					1			EST. 25% PYRITE
		50 X 50	10 C		1					1			
		75 X 125	20 C				1			1			
									TOTAL	3	21.0	82	
-04	Y	25 X 25	5 C		3					3			EST. 15% PYRITE
		50 X 50	10 C		1					1			
		50 X 100	15 C		3					3			
		75 X 100	18 C		1					1			
		100 X 125	22 C	1						1			
									TOTAL	9	23.0	231	
-05	Y	25 X 25	5 C		1					1			EST. 20% PYRITE
		50 X 50	10 C	2						2			
		75 X 125	20 C		1					1			
		125 X 150	27 C			1				1			
		150 X 175	50 M	1						1			
									TOTAL	6	22.6	692	
-06	Y	25 X 50	8 C		1					1			EST. 7% PYRITE
									TOTAL	1	26.9	3	
22-01	Y	50 X 50	10 C		1					1			EST. 5% PYRITE
									TOTAL	1	17.7	11	
-02	Y	25 X 50	8 C						1	1			EST. 5% PYRITE
		50 X 50	10 C						1	1			
									TOTAL	2	26.7	10	
-03	Y	25 X 25	5 C				1			1			EST. 10% PYRITE
		25 X 75	10 C		1					1			
		50 X 50	10 C				1			1			

```
GOLD CLASSIFICATION
===================
VISIBLE GOLD FROM SHAKING TABLE AND PANNING

ESRT20CT.WR1                          NUMBER OF GRAINS

                                      ABRADED   IRREGULAR  DELICATE       NON    CALC V.G.
SAMPLE # PANNED                       ========  =========  ========       MAG      ASSAY
          Y/N    DIAMETER   THICKNESS    T    P    T    P    T    P TOTAL GMS      PPB    REMARKS

 ORT-86
                  50 X   75      13 C                   1               1
                                                                     ---------------------
                                                               TOTAL    4   36.3       22

    -04    Y      25 X   25       5 C         3                         3                EST. 5% PYRITE
                                                                     ---------------------
                                                               TOTAL    3   30.3        2

    -05    Y      25 X   25       5 C                             1     1                EST. 15% PYRITE
                                                                     ---------------------
                                                               TOTAL    1   41.8        1

    -06    Y      25 X   25       5 C                             1     1                EST. 15% PYRITE
                  50 X   50      10 C         1         1               2                3 GRAINS GALENA
                  50 X   75      13 C         1                         1
                                                                     ---------------------
                                                               TOTAL    4   43.2       18

    -07    Y      25 X   25       5 C         2                         2                EST. 10% PYRITE
                                                                     ---------------------
                                                               TOTAL    2   55.8        1

  23-01    Y      25 X   25       5 C                   2         1     3                EST. 7% PYRITE
                  25 X   50       8 C         1                         1
                 100 X  125      22 C         1                         1
                                                                     ---------------------
                                                               TOTAL    5   34.0       67

    -02    Y      25 X   25       5 C         1                         1                EST. 15% PYRITE
                  50 X   75      13 C         1                         1
                  50 X  100      15 C         1                         1
                  75 X   75      15 C         1                         1
                 100 X  100      20 C         1                         1
                 200 X  350      50 C    1                              1
                                                                     ---------------------
                                                               TOTAL    6   34.6      915

    -03    Y      50 X   50      10 C         1                         1                EST. 35% PYRITE
                  50 X  100      15 C         1                         1
                                                                     ---------------------
                                                               TOTAL    2   25.1       33
```

APPENDIX IV

CHEMICAL ANALYSES AND ASSAYS
OF TILL AND BEDROCK SAMPLES

ORT

CERTIFICATE OF ANALYSIS

TO: ESSO MINERALS CANADA
ATTN: MARCEL DUROCHER
153A PERREAULT AVENUE
VAL D'OR, QUEBEC
J9P 2H1

CUSTOMER NO. 213

DATE SUBMITTED
29-OCT-86

REPORT 30117

REF. FILE 25564-X5

129 HEAVY MINERALS

WERE ANALYSED AS FOLLOWS:

	METHOD	DETECTION LIMIT
AU PPB	NA	5.000
SC PPM	NA	10.000
CR PPM	NA	500.000
FE %	NA	5.000
CO PPM	NA	100.000
AS PPM	NA	1.000
MO PPM	NA	5.000
SB PPM	NA	0.200
BA PPM	NA	300.000
LA PPM	NA	10.000
TA PPM	NA	10.000
W PPM	NA	4.000
TH PPM	NA	10.000
U PPM	NA	2.000
WEIGHT GM		0.010

X-RAY ASSAY LABORATORIES LIMITED

DATE 20-NOV-86

CERTIFIED BY ....

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SAMPLE	AU PPB	SC PPM	CR PPM	FE %	CO PPM
01-01	170	50	<500	20	100
01-02	320	50	500	17	200
02-01	120	50	<500	15	300
03-01	200	40	500	16	100
03-02	400	50	500	17	100
03-03	190	40	<500	16	200
04-01	120	70	600	19	<100
04-02	180	40	<500	13	<100
04-03	190	60	500	16	100
04-04	370	50	<500	14	100
04-05	59	60	500	16	100
05-01	120	40	<500	17	<100
05-02	100	30	<500	18	100
06-01	310	60	600	16	<100
06-02	370	60	500	16	<100
08-01	440	60	600	17	<100
08-02	990	70	<500	17	100
09-01	220	50	500	14	<100
09-02	100	50	<500	15	<100
09-03	76	60	500	17	<100
09-04	110	50	<500	15	<100
09-05	67	50	<500	16	<100
09-06	750	60	500	20	100
09-07	370	50	600	17	100
10-01	96	40	<500	12	<100
10-02	94	50	600	15	<100
10-03	40	50	<500	15	<100
10-04	150	60	800	19	<100
10-05	360	60	500	20	100
10-06	82	60	600	17	100
10-07	230	50	<500	12	100
11-01	270	50	600	15	<100
11-02	130	40	<500	13	<100
11-03	270	50	<500	13	100
11-04	120	40	<500	13	100
11-05	110	50	500	14	100
11-06	110	60	600	15	100
11-07	110	50	<500	11	<100
11-08	140	40	<500	11	100
11-09	400	50	<500	15	100
12-01	46	60	600	19	<100
12-02	310	60	600	20	100
12-03	140	40	<500	13	<100
12-04	83	50	500	15	100
12-05	150	60	600	13	100
12-06	140	60	500	17	100
12-07	99	40	<500	13	100
13-01	99	50	<500	15	<100

SAMPLE	AU PPB	SC PPM	CR PPM	FE %	CO PPM
13-02	66	50	<500	16	<100
13-03	190	50	<500	15	<100
13-04	240	60	700	21	100
13-05	79	50	<500	17	100
13-06	200	50	<500	13	<100
13-07	1100	40	<500	17	100
14-01	330	60	500	15	<100
14-02	80	60	<500	20	<100
14-03	290	60	500	20	<100
14-04	440	60	500	15	<100
14-05	870	70	600	19	<100
14-06	190	50	<500	16	<100
14-07	270	80	<500	20	100
14-08	94	70	<500	14	100
14-09	190	60	<500	13	<100
15-01	110	50	<500	15	<100
15-02	75	70	600	17	<100
15-03	110	70	500	14	<100
15-04	71	70	<500	10	<100
15-05	68	50	<500	11	<100
15-06	96	40	<500	11	<100
15-07	64	60	500	14	<100
15-08	51	80	600	19	100
15-09	310	50	<500	15	200
15-10	190	50	<500	11	100
15-11	51	40	<500	9	<100
16-01	100	80	800	20	<100
16-02	310	60	500	17	100
16-03	62	60	<500	15	<100
16-04	58	50	<500	12	<100
16-05	200	60	<500	14	<100
16-06	43	70	500	17	<100
16-07	72	50	<500	17	<100
16-08	30	50	<500	15	<100
16-09	61	60	<500	15	100
16-10	370	60	<500	14	100
16-11	87	70	<500	15	100
17-01	63	80	500	19	<100
17-02	74	40	<500	12	<100
17-03	88	60	600	21	100
17-04	210	70	600	19	100
17-05	61	80	500	21	100
17-06	130	50	<500	14	<100
17-07	52	50	<500	12	<100
17-08	94	70	600	17	<100
17-09	60	50	<500	15	100
17-10	40	70	700	19	100
17-11	110	60	600	20	100

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SAMPLE	AU PPB	SC PPM	CR PPM	FE %	CO PPM
18-01	160	60	800	22	100
18-02	34	50	<500	12	<100
18-03	270	40	<500	12	<100
18-04	62	40	<500	13	<100
18-05	66	60	500	18	100
18-06	84	60	<500	14	<100
18-07	89	50	500	17	100
18-08	2600	50	600	15	100
19-01	400	40	500	21	100
19-02	550	40	500	19	100
19-03	60	60	700	21	100
19-04	67	50	<500	19	100
20-01	60	50	600	17	<100
20-02	530	30	<500	12	<100
20-03	240	60	1000	21	100
20-04	99	60	600	22	100
20-05	180	30	<500	12	<100
21-01	91	70	600	18	<100
21-02	200	50	500	18	100
21-03	290	60	600	26	200
21-04	310	70	<500	24	100
21-05	600	70	<500	22	100
21-06	84	50	<500	15	100
22-01	72	60	600	20	100
22-02	41	50	<500	16	100
22-03	78	50	<500	15	100
22-04	98	60	600	19	100
22-05	53	60	<500	14	100
22-06	70	60	<500	14	100
22-07	56	50	<500	13	100
23-01	200	60	<500	14	100
23-02	360	60	500	18	100
23-03	96	60	<500	20	200

SAMPLE	AS PPM	MO PPM	SB PPM	BA PPM	LA PPM
01-01	540	<5	0.4	400	170
01-02	380	<5	1.9	<300	120
02-01	200	<5	0.8	<300	60
03-01	57	<5	0.5	<300	190
03-02	70	<5	0.5	<300	160
03-03	85	<5	0.5	<300	160
04-01	16	<5	0.5	400	250
04-02	34	<5	0.5	<300	150
04-03	67	<5	0.3	<300	170
04-04	37	<5	0.4	<300	180
04-05	46	<5	0.3	<300	170
05-01	130	<5	1.1	<300	200
05-02	130	<5	5.6	<300	130
06-01	6	<5	0.2	<300	200
06-02	7	<5	0.3	<300	170
08-01	32	<5	0.4	300	210
08-02	73	<5	0.4	<300	110
09-01	4	<5	0.3	<300	200
09-02	3	<5	0.2	<300	220
09-03	4	<5	0.3	<300	260
09-04	7	<5	0.3	<300	210
09-05	24	<5	0.3	300	210
09-06	62	<6	0.6	400	230
09-07	40	<5	0.3	400	180
10-01	3	<5	0.3	300	180
10-02	3	<5	0.3	400	220
10-03	4	<5	0.3	<300	230
10-04	36	<5	0.4	<300	240
10-05	44	<5	0.4	<300	190
10-06	57	<5	0.5	<300	170
10-07	40	<5	0.4	<300	110
11-01	24	<5	0.3	400	190
11-02	54	<5	0.4	<300	150
11-03	57	<5	0.6	300	150
11-04	53	<5	0.5	400	130
11-05	56	<5	0.5	300	150
11-06	51	<5	0.4	<300	210
11-07	38	<5	0.4	<300	130
11-08	40	<5	0.5	<300	100
11-09	68	<5	0.3	300	130
12-01	4	<5	0.3	300	240
12-02	29	<5	0.8	600	220
12-03	30	<5	0.4	400	210
12-04	40	<5	0.4	<300	180
12-05	41	<5	0.6	<300	170
12-06	45	<5	0.6	<300	190
12-07	34	<5	0.3	<300	120
13-01	2	<5	0.3	<300	230

SAMPLE	AS PPM	MO PPM	SB PPM	BA PPM	LA PPM
13-02	2	<5	0.3	<300	230
13-03	35	<5	0.3	<300	200
13-04	76	<5	0.6	<300	240
13-05	51	<5	0.5	<300	190
13-06	33	<5	0.3	<300	150
13-07	56	<5	0.3	300	170
14-01	5	<5	0.2	<300	260
14-02	3	<5	0.2	<300	290
14-03	6	<5	0.3	500	280
14-04	6	<6	0.4	500	290
14-05	7	<5	0.5	300	330
14-06	24	<5	0.3	<300	220
14-07	58	<6	0.9	<300	230
14-08	19	<5	0.5	300	180
14-09	28	<5	0.4	400	140
15-01	5	<5	0.4	<300	300
15-02	5	<5	0.2	<300	330
15-03	3	<5	0.5	<300	260
15-04	2	<5	0.3	<300	270
15-05	2	<5	0.2	<300	210
15-06	18	<5	0.4	<300	160
15-07	21	<5	0.3	<300	200
15-08	63	<5	0.7	<300	250
15-09	360	<5	0.7	<300	80
15-10	130	<5	0.3	<300	100
15-11	76	<5	<0.2	<300	80
16-01	25	<5	0.4	500	290
16-02	47	<5	0.5	<300	250
16-03	31	<5	0.5	400	230
16-04	27	<5	0.4	<300	220
16-05	29	<5	0.5	300	250
16-06	26	<5	0.3	<300	280
16-07	25	<5	0.3	<300	230
16-08	55	<5	0.4	<300	170
16-09	33	<5	0.5	<300	150
16-10	22	<5	0.5	<300	150
16-11	33	<5	0.4	400	150
17-01	12	<5	0.4	<300	300
17-02	13	<5	0.2	<300	190
17-03	77	<5	0.4	500	260
17-04	53	<5	0.5	<300	290
17-05	41	<5	0.6	500	310
17-06	19	<5	0.4	300	210
17-07	12	<5	0.3	<300	220
17-08	8	<5	0.3	<300	290
17-09	43	<5	0.6	300	190
17-10	52	<5	0.6	<300	240
17-11	74	<5	0.9	<300	210

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SAMPLE	AS PPM	MO PPM	SB PPM	BA PPM	LA PPM
18-01	49	<5	0.7	<300	270
18-02	31	<5	0.4	<300	200
18-03	26	7	0.4	<300	190
18-04	35	<5	0.3	300	200
18-05	48	<5	0.5	300	250
18-06	30	<5	0.7	<300	170
18-07	65	<5	0.5	<300	170
18-08	45	<5	0.6	<300	170
19-01	82	<5	0.7	<300	160
19-02	81	<5	0.6	500	140
19-03	56	<5	0.6	300	200
19-04	66	<5	0.7	<300	220
20-01	18	<5	0.4	300	200
20-02	51	<5	0.4	300	160
20-03	72	<5	0.8	<300	210
20-04	84	<5	0.5	500	260
20-05	37	<5	0.3	<300	150
21-01	19	<5	0.4	300	260
21-02	57	<5	0.6	<300	230
21-03	93	<5	0.9	<400	310
21-04	74	<5	0.8	400	320
21-05	62	<5	0.8	400	270
21-06	53	<5	0.2	<300	190
22-01	31	<5	0.5	500	260
22-02	46	<5	0.5	<300	170
22-03	43	<5	0.4	<300	210
22-04	52	<5	0.5	<300	240
22-05	41	<5	0.5	<300	150
22-06	47	<5	0.6	<300	150
22-07	30	<5	0.4	<300	140
23-01	39	<5	0.2	400	190
23-02	46	<5	0.3	<400	170
23-03	27	66	0.3	300	120

SAMPLE	TA PPM	W PPM	TH PPM	U PPM	WEIGHT GM
01-01	<10	5	30	9	34.9
01-02	<10	5	10	5	20.9
02-01	<10	<4	10	3	51.3
03-01	<10	9	40	13	17.9
03-02	<10	6	30	11	24.3
03-03	<10	5	30	10	25.1
04-01	<10	11	50	16	20.7
04-02	<10	4	30	10	21.6
04-03	<10	4	30	10	25.2
04-04	<10	6	30	10	23.9
04-05	<10	10	20	9	21.4
05-01	10	360	30	8	16.1
05-02	10	200	20	5	13.5
06-01	<10	19	40	12	19.8
06-02	<10	6	30	9	21.6
08-01	<10	7	40	12	22.3
08-02	<10	11	10	5	23.3
09-01	<10	220	40	13	18.1
09-02	10	17	30	10	12.2
09-03	<10	24	60	16	17.6
09-04	10	56	30	10	13.5
09-05	10	51	40	10	12.3
09-06	<10	73	40	12	19.5
09-07	<10	760	30	9	26.7
10-01	10	19	30	8	16.0
10-02	<10	9	50	15	21.5
10-03	10	10	40	11	15.4
10-04	<10	6	50	14	19.1
10-05	<10	4	20	9	29.8
10-06	<10	5	30	9	28.7
10-07	<10	4	10	6	42.3
11-01	<10	5	40	11	26.6
11-02	<10	4	20	5	16.2
11-03	<10	5	20	8	29.6
11-04	<10	4	20	8	21.7
11-05	<10	4	20	8	28.7
11-06	<10	6	30	10	21.1
11-07	<10	11	20	7	25.4
11-08	<10	7	20	6	38.2
11-09	<10	7	20	7	44.5
12-01	<10	20	50	14	22.0
12-02	<10	9	40	12	20.1
12-03	10	44	30	8	14.5
12-04	<10	9	30	9	22.0
12-05	<10	6	20	8	19.4
12-06	<10	7	40	10	19.8
12-07	<10	9	20	7	32.2
13-01	10	9	40	9	15.7

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SAMPLE	TA PPM	W PPM	TH PPM	U PPM	WEIGHT GM
13-02	10	6	40	10	12.2
13-03	<10	5	50	13	21.1
13-04	<10	5	50	14	22.1
13-05	<10	5	30	10	25.6
13-06	<10	130	20	8	30.4
13-07	<10	30	30	9	38.7
14-01	<10	8	60	15	18.4
14-02	10	7	50	9	17.8
14-03	10	6	70	18	23.4
14-04	<10	7	60	18	16.0
14-05	<10	7	80	21	19.9
14-06	10	4	40	10	13.3
14-07	<10	5	40	12	16.4
14-08	<10	4	20	9	25.4
14-09	<10	5	20	9	29.5
15-01	20	9	60	13	17.1
15-02	<10	20	70	19	17.1
15-03	<10	7	50	15	19.9
15-04	<10	17	40	16	18.9
15-05	<10	5	30	10	15.5
15-06	<10	5	40	9	48.1
15-07	<10	21	40	12	34.5
15-08	<10	6	40	14	31.5
15-09	<10	<4	10	4	73.4
15-10	<10	<4	10	5	55.1
15-11	<10	<4	10	4	32.9
16-01	<10	8	60	16	20.3
16-02	<10	8	40	14	27.7
16-03	<10	4	50	14	16.6
16-04	10	4	30	9	15.5
16-05	<10	5	40	14	23.5
16-06	<10	6	40	17	21.5
16-07	10	5	40	12	14.8
16-08	10	4	20	8	13.6
16-09	<10	4	20	7	28.5
16-10	<10	6	20	8	28.2
16-11	<10	6	20	8	22.3
17-01	<10	8	60	16	23.9
17-02	10	19	30	9	15.9
17-03	<10	11	50	14	28.7
17-04	<10	14	50	15	25.6
17-05	<10	9	50	17	26.9
17-06	10	280	30	11	14.5
17-07	10	8	30	11	12.3
17-08	<10	6	50	17	37.5
17-09	<10	9	30	12	23.3
17-10	<10	5	30	13	26.0
17-11	<10	4	30	9	30.2

SAMPLE	TA PPM	W PPM	TH PPM	U PPM	WEIGHT GM
18-01	<10	25	60	15	26.1
18-02	10	6	30	8	11.8
18-03	10	4	30	8	14.1
18-04	10	5	30	8	14.6
18-05	<10	5	50	17	25.7
18-06	<10	9	20	8	27.3
18-07	<10	4	30	9	28.3
18-08	<10	5	30	10	26.6
19-01	<10	5	30	9	38.4
19-02	<10	4	30	8	31.0
19-03	<10	6	40	11	32.6
19-04	<10	4	30	9	27.5
20-01	<10	6	50	13	25.7
20-02	10	<4	30	8	16.6
20-03	<10	4	40	12	26.3
20-04	<10	6	50	14	31.8
20-05	10	6	30	8	17.7
21-01	<10	7	50	14	22.2
21-02	<10	8	50	14	24.1
21-03	<10	6	70	18	20.9
21-04	10	6	70	19	23.0
21-05	<10	6	50	<2	22.5
21-06	<10	5	30	10	26.3
22-01	<10	29	50	13	17.6
22-02	<10	<4	20	9	26.5
22-03	<10	7	40	12	36.1
22-04	<10	6	40	13	30.0
22-05	<10	4	20	8	41.7
22-06	<10	9	20	8	43.2
22-07	<10	32	20	7	55.5
23-01	<10	23	30	10	34.0
23-02	<10	7	30	7	34.4
23-03	<10	21	10	6	25.0

CERTIFICATE OF ANALYSIS

TO: ESSO MINERALS CANADA
ATTN: JACQUES BABINEAU
153A PERREAULT AVENUE
VAL D'OR, QUEBEC
J9P 2H1

CUSTOMER NO. 213

DATE SUBMITTED
16-OCT-86

REPORT 29765

REF. FILE 25411-K5

53 CRUSHED ROCKS

WERE ANALYSED AS FOLLOWS:

	METHOD	DETECTION LIMIT
AU PPB	FADCP	1.000
AS PPM	XRF	3.000

X-RAY ASSAY LABORATORIES LIMITED

DATE 28-OCT-86

CERTIFIED BY ....

SAMPLE	AU PPB	AS PPM
ORT-1	2	9
ORT-2	3	<3
ORT-3	2	<3
ORT-4	15	15
ORT-5	7	24
ORT-6	4	<3
ORT-7	4	<3
ORT-8	14	<3
ORT-9	1	<3
ORT-10	3	<3
ORT-11	2	<3
ORT-12	2	<3
ORT-13	3	<3
ORT-14	2	<3
ORT-15	<1	<3
ORT-16	2	<3
ORT-17	<1	<3
ORT-18	2	<3

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SAMPLE	AU PPB	AS PPM
ORT-19	2	<3
ORT-20	<1	<3
ORT-21	<1	<3
ORT-22	<1	<3
ORT-23	3	<3