These terms relate to prospecting and exploration, to the regional geology of Newfoundland and Labrador, and to some of the geological environments preserved in the province. Some common rocks, textures and structural terms are also defined. You may come across some of these terms when reading company assessment files, government reports or papers from journals.

A

A-HORIZON SOIL	The uppermost layer of a soil, containing organic material and leached minerals.
ADIT	An opening that is driven horizontally (into the side of a mountain or hill) to access a mineral deposit.
AIRBORNE SURVEY	A geophysical survey done from the air, by systematically crossing an area or mineral property using aircraft outfitted with a variety of sensitive instruments designed to measure the earth's magnetic field, the intensity of its electro-magnetic fields, and/or the radiation emitted by rocks at or near the surface. These surveys detect anomalies, or unexpected deviations in the regional magnetic, electro-magnetic or radiometric data. In some cases anomalies may reflect buried mineralization or zones of hydrothermal alteration. Not all anomalies are economically significant. In fact, most can be explained by other geological features.
AIRBORNE MAGNETIC (or AEROMAG) MAPS	A regional magnetic map that measures disturbances in the earth's magnetic field. Aeromag maps are usually produced by flying a magnetometer at a low level along flight lines on a pre-determined grid pattern. The lower the aircraft and the closer the flight lines, the more sensitive the survey. Aeromag maps are important exploration tools and have played a major role in many major discoveries (e.g., the Olympic Dam deposit in Australia).
ALTERATION	Chemical or mineralogical changes in the composition of a rock. Alteration can be the result of weathering or metamorphism, or can form as the result of the passage of hydrothermal fluids through or adjacent to rocks.
ALTERATION ZONE	An area where rocks have been altered to secondary (or alteration) minerals, usually around the perimeter of a mineral deposit.
AMPHIBOLITE	A dark-colored metamorphic rock of mafic composition consisting mainly of the minerals hornblende and plagioclase.
AMYGDULE	Also named amygdale, a gas cavity (vesicle) in a volcanic rock that has been filled with secondary minerals, such as calcite, chlorite, hematite or quartz.
AMYGDALOIDAL	A term describing volcanic rocks that contain numerous amygdules.
ANDESITE	A fine-grained volcanic rock of intermediate composition (half-way between felsic and mafic), consisting largely of plagioclase and one or more mafic minerals. It is the extrusive equivalent of diorite.
ANTICLINE	A type of fold in bedrock that is, or once was, convex upward, with its limbs dipping away from its axis (core or centre). The oldest rocks in an anticline occur in its central part or core.

ANOMALY	Any derivation from the norm. In mineral exploration, one is mainly concerned with anomalies in the geophysical and geochemical character of rocks, tills, soils, water or unconsolidated sediment in streams or lakes sediments. Anomalies are classed as positive or negative.
APHANITIC	Refers to a very, very fine grained texture in an igneous rock, where crystals are too small to be seen with naked eye.
APPALACHIANS	The Paleozoic orogen or mountain belt along the east side of North America extending continuously for 3500 km from Newfoundland to Alabama. Rocks in the Appalachians were affected by several pulses of Paleozoic deformation metamorphism and plutonism, between about 540 and 300 million years ago. The Appalachians are bounded to the west by various parts of the North American Craton, including the Grenville structural province. The Appalachians in Newfoundland contain four principal geological divisions (from west to east): the Humber Zone , the Dunnage Zone, the Gander Zone, and the Avalon Zone.
AREA OF INFLUENCE	An additional area surrounding the (optionees) original claims that will also be included in the terms of an option agreement. Those same terms will apply if either party acquires claims within a defined time within the area of influence.
ARKOSE	A sedimentary rock formed by the cementation of sand-sized grains of feldspar and quartz.
ASSAY	A chemical analysis that determines the amount of easily extractable elements in a sample (of rock, soil, till, silt, etc.). The concentrations of precious metals such as gold and silver are typically reported as grams of metal per tonne of rocks; base metal assays (copper, lead, zinc, etc.) are given in weight percent. Assay sheet from laboratories typically give gold concentrations in parts per billion (ppb). 1000 ppb equals 1 part per million (ppm), equals 1 gram/tonne (there are about 34 grams in an ounce). Base metal assays are typically measured in parts per million (ppm); 10,000 ppm equals one percent.
AUREOLE	The zone of contact metamorphism surrounding an igneous intrusion. Aureoles commonly contain hornfels.
AVALON ZONE	The easternmost of the four main geological divisions of the island of Newfoundland. Its western boundary is defined by the Dover Fault in northeastern Newfoundland and by the Hermitage Bay Fault in southeastern Newfoundland. Equivalent rocks to the Avalon Zone occur sporadically along the south coast of Newfoundland, as far west as La Poile. The Avalon Zone is characterized by its Cambrian shales and by its Late Precambrian volcanic, sedimentary and plutonic rocks. Avalon Zone rocks host well-known deposits deposits of gold, fluorite, hematite and slate.

B

B-HORIZON SOIL	The intermediate layer in a soil, situated below the A-horizon and consisting of clays and oxides. Also called the zone of accumulation,

	the B-horizon is the most typically sought material in a soil sampling survey.
BACK-ARC BASIN	The regional depression above a subduction zone, between an island arc and the continental mainland, commonly underlain by oceanic crust. It also contains sediment eroded from the volcanic arc and the continent.
BANDED IRON FORMATION	An iron-rich rock composed of dark-colored layers of iron-rich minerals, which are interlayered with light silica-rich material.
BASALT	A dark-colored, normally fine-grained volcanic rock composed chiefly of plagioclase, pyroxene ± olivine. The equivalent intrusive rock is a gabbro. It is the major rock type in modern and ancient ocean basins. Some basalts can be porphyritic or amygdaloidal.
BASE METAL	A general term used to refer to the common commercial metals, such as copper, lead and zinc, as opposed to the more "precious" metals gold and silver.
BEDDING	The presence of layers (beds or laminations) in sedimentary or volcanic rocks. The layers can be distinguished from each other by features such as composition, color and grain size.
BEDROCK	The solid mass of rock that makes up the Earth's crust. A piece of bedrock, such as a cliff, that is now exposed to the atmosphere is known as an outcrop.
BESSHI TYPE DEPOSIT	Stratabound or concordant deposits of massive to layered pyrrhotite, chalcopyrite, sphalerite, pyrite and galena hosted by interbedded marine basalts and clastic sedimentary rocks, that formed in extensional oceanic environments, such as back-arc basins. Alteration associated with this type of deposit type is similar to that in VMS deposits: for example: quartz, chlorite, calcite, iron carbonate, pyrite and sericite. Thick early Paleozoic sedimentary sedimentary sequences of central and southern Newfoundland contain mafic volcanic units and should be considered prospective ground for this type of deposit.
BRECCIA	A coarse-grained volcanic, sedimentary or hydrothermal rock, composed of angular broken rock fragments. These are held together by a matrix that may consist of finer grained rock fragments, mineral cement, or very fine-grained matrix material.
BRITTLE FAULT	A fault structure in which rocks have been deformed by fracturing.
BUY-OUT CLAUSE	A clause within an option agreement that gives a company the option of buying out the prospector's interest in a property for cash and/or shares. A company may offer a buy-out agreement in lieu of an advance royalty agreement.

C

CALC-SILICATE ROCK	Crystalline metamorphic rock formed mainly of calcium-bearing silicate minerals such as amphibole.

CALDERA	A large-scale, roughly circular volcanic depression, formed near the top of a volcano when eruption empties the magma chamber under the volcano. The caldera can then be filled with sediments and volcanics and intruded by younger intrusions. More than one caldera can form in any one area as volcanism continues. Such calderas are called "nested".
CAMBRIAN	The name given to the interval or period of geological time from about 545 to 495 million years ago.
CHALCEDONY	A very fine-grained form of quartz with a distinctive waxy look (not feel). It was originally a gel without crystal form but normally has been recrystallized. Its color is variable: white, gray, pale blue, and, less often, black.
CHANNEL SAMPLE	A systematic sample across a rock surface collected by means of a continuous cut with a diamond saw and/or hammer and chisel. A channel sample is more representative of the grade of a mineral showing than a grab sample.
CHERT	A fine-grained, very hard, very fine-grained (siliceous) sedimentary rock made up of very fine-grained or amorphous silica. Chert, when broken, has a fracture pattern that resembles that of thick glass (conchoidal fracture).
CLASTIC (SEDIMENTARY) ROCKS	Rocks that are composed of broken fragments (of all grain sizes) derived from older rocks by weathering and erosion, and transported from their place of origin (as opposed to sedimentary rocks that form through precipitation or evaporation).
CLEAVAGE	In a rock, the tendency to split along parallel, in many cases, closely-spaced, planar surfaces.
CONGLOMERATE	A clastic sedimentary rock containing rounded to subangular pebbles, cobbles or boulders, commonly set in a relatively finer-grained matrix of sand or silt.
CONTINENTAL CRUST	That part of the Earth's crust that directly underlies (or once underlay) the continents and continental shelves. On average, the continental crust is about 35 km in thickness, but can be 50 to 70 km thick under some high mountain ranges.
CONTINENTAL MARGIN	The tectonic region that lies at the edge of a continent. In some cases a continental margin coincides with a tectonic plate boundary, but not in every instance.
CRYSTALLINE ROCK	A generic term that is normally used to describe igneous or metamorphic rocks, as opposed to sedimentary or volcanic rocks.
CYPRUS TYPE DEPOSIT	Pyrite-rich, copper-zinc deposits hosted by basaltic pillow lavas within ophiolite (rocks representing oceanic crust from ancient ocean floor). The deposits contain both massive sulphide and stockwork mineralization. Typical alteration minerals include chlorite and quartz near the deposit, and sericite farther away. Black chlorite, quartz and pyrite occurs in veins near some deposits. The Tilt Cove copper deposit (9 million tonnes) on the Baie Verte Peninsula is an example of a Cyprus-type deposit.

D

DEFORMATION	The processes by which a rock changes its shape, form, or volume.
DETECTION LIMIT	Normally refers to the lowest concentration of any particular element that can be accurately measured by any one particular type of analytical instrument. (e.g., 5 ppb is the detection limit for gold, using the INAA analytical method).
DIABASE DYKE (or dike)	A tabular body of mafic (dark-colored) intrusive igneous rock, that cuts discordantly across the country rocks. Diabase consisting mainly plagioclase and pyroxene. It is finer-grained than gabbro and diorite.
DIAMOND DRILLING	A common rock drilling method used in mineral exploration where diamond-tipped bits allow recovery of a cylindical core rock.
DIATREME	A breccia formed by the explosive escape of fluids, gases, and in some cases, metals.
DISSEMINATED SULPHIDES	Sulphide minerals that consist of clots or patches in the rocks. These deposits are not as high-grade as massive sulphide deposits but typically have greater tonnage. The Point Leamington deposit northeast of Grand Falls is an example of a disseminated sulfide deposit.
DOLOSTONE	A sedimentary rock composed primarily of dolomite (a calcium - magnesium mineral). Dolostone look like limestone but does not react readily with hydrochloric acid (HCl). It forms when magnesium replaces some of the calcium in limestone.
DUCTILE FAULT	A fault in which rocks are deformed, but without fracturing (as opposed to a brittle fault).
DUNNAGE ZONE	That part of central Newfoundland that is characterized by thick sequences of Cambrian to Ordovician mafic and felsic volcanic rocks, associated slates and coarser- grained, marine clastic sedimentary rocks. The Dunnage Zone contains rocks that formed in the ancient proto-Atlantic (Iapetus) Ocean. The zone is bounded by the Baie Verte Line (and the Humber Zone) in the west and the Gander River Ultrabasic Belt in the east; it is widest in northeastern Newfoundland. The zone is well known for its VMS deposits (e.g., Buchans) and also contains a number of epithermal and deeper-level, mesothermal gold deposits.

E

ELECTROMAGNETIC (EM) SURVEY	A geophysical survey that measures the the electrical conductivity of rocks, in the hope of finding a conductive mineral deposit. Mineral exploration EM surveys can be done by air, on the ground, or down a drill hole. EM surveys also pick up water-filled faults, graphitic shales, salty groundwater. Airborne EM surveys were of great importance in the discovery of the of the world-class Kidd Creek massive sulphide orebodies.

EPITHERMAL GOLD (and/or silver) DEPOSIT	A gold (and/or silver) deposit that forms at shallow depth in the earth's crust, typically less than 1 km from the surface (a depth of 1000 m may not sound shallow, but it is, relative to many other types of subterranean mineral forming processes). Epithermal deposits form in hydrothermal systems that are linked to volcanic and related magmatic activity. Hot, metal and gas-bearing fluids rise to the surface as hot springs or fumaroles, depositing metals under certain conditions on their way upwards in the crust. Epithermal deposits typically occur in volcanic terranes but can also be found in many other rock types. Epithermal deposits typically form in subaerial (under the air, as opposed to subaqueous - under water) conditions. Shallow intrusions are the source of heat, metals and some or all of the fluids responsible for the formation of these deposits. There are two end-member styles of epithermal gold deposits, high-sulphidation and low-sulphidation. Both types are well preserved in the Avalon Zone of eastern and southern Newfoundland, and in the Botwood Basin (Dunnage Zone) of central Newfoundland. The Hope Brook Mine is an epithermal (high-sulphidation) gold deposit. The presence of silica in either massive or vuggy form, the presence of banded, waxy quartz veins, and the occurrence of minerals such as pyrophyllite and alunite are all indications of proximity to epithermal style mineralization or alteration.
ERRATIC	A glacially transported stone or boulder. The term is usually applied when the transported material is left in an area of different bedrock composition.

F

FAULT	The fracture or surface of where rocks break or rupture, and along which there has clearly been movement of the rock on either side.
FAULT BLOCK	A section of rock separated from other rock by one or more faults. Fault blocks move relative to each other vertically, horizontally or somewhere in between (orthogonally).
FAULT GOUGE	Soft, pulverized clay-like or puggy material found along some faults. Fault gouge is uncemented or unconsolidated, and can be easily dug away with your hands.
FELSIC	Refers to a rock rich in light-colored minerals, such as quartz and potassium feldspar.
FERROMAGNESIAN	Usually refers to a (mafic) mineral rich in iron and magnesium.
FOLIATION	A planar structure or any planar set of minerals in metamorphic rocks that formed from direct pressure during deformation. Cleavage is a type of foliation.
FOOT WALL BLOCK (foot wall)	The rocks that lie below an inclined fault plane.

G

GANDER ZONE	That part of northeastern and southern Newfoundland that is characterizedby (Ordovician and earlier) quartz-rich sedimentary rocks that have been metamorphosed and deformed, and intruded by large bodies of porphyritic granite. Much of the Gander Zone contains crystalline metamorphic rocks, in sharp contrast to the bounding zones (Avalon in the east and Dunnage in the west).
GEOPHYSICS	The study of the physical properties of the earth and the composition and movement of its component rock. Geophysics is used extensively in mineral exploration to detect mineralized rocks characterized by any one or more of their physical properties: e.g., magnetism (aeromag survey), electrical conductivity (EM-16, I.P.) or gravity.
GEOPHYSICAL SURVEY	The measurement the magnetic, electrical or other physical characteristics of the Earth as a means to predict the possibility of buried concentrations of economic minerals.
GLACIAL STRIATIONS	The scratches and grooves on rock surfaces made by rock fragments frozen into the bottom of a moving ice sheet. Striations trend in the same direction as the ice movement.
GNEISS	A coarse-grained foliated metamorphic rock that shows parallel or streaky bands of differing composition; granular minerals (commonly quartz and feldspars) typically alternate with bands of platy or elongate minerals (e.g., mica and amphibole).
GOSSAN	A rusty rock in which iron-bearing sulphide minerals have been oxidized by air and water. Gossans may overlie a significant sulphide body. Don't worry if your gossan sample returns low assay results; the metals may have been removed by weathering or concentrated elsewhere. The Voisey's Bay Ovoid deposit coincides with a major zone of gossan, which is clearly visible from the air.
GRAB SAMPLE	Randomly selected rock samples hammered (grabbed) from the outcrop. This is a normal first step in sampling mineralized rock.
GRANITE	A light-colored intrusive igneous rock dominated by quartz (10-50%) and potassium feldspar, with lesser amounts of plagioclase feldspar.
GRANODIORITE	An intrusive igneous rock related to granite, but contains a greater proportion of plagioclase feldspar and mafic minerals; roughly intermediate in composition between a granite and a diorite.
GRID LINES	A network of cut or flagged survey lines, along which sampling mapping or geophysical surveying is carried out.
GRUBSTAKING AREEMENT	An agreement between a prospector and a company (or individual) whereby the company (or individual), known as the grubstaker, agrees to equip and/or finance a prospector in return for an interest in any mineral properties discovered or areas staked.

H

HANGING WALL BLOCK (hanging wall)	The body of rock that lies above an inclined fault plane.
HARDPAN	A relatively hard layer of soil at, or just below, the ground surface, cemented by silica, iron oxide, calcium carbonate, or organic matter.
HERMITAGE FLEXURE	At term used to describe the large-scale regional curvature of rocks units in southern Newfoundland (on the scale of the island) between Hermitage Bay and Port-aux- Basques.
HORNFELS	A metamorphic rock characterized a dense, uniform grain size, typically without a foliation. Usually formed high-temperature, low-pressure by contact metamorphism, hornfelses are normally found near intrusive rocks.
HUMBER ZONE	The westernmost of the four main geological divisions of the island of Newfoundland. It consists of 1 billion year old crystalline rocks of the Grenville structural province, overlain by Cambrian clastic sedimentary rocks, and Cambro-Ordovician limestones and dolomites. Other clastic rocks and ophiolites are faulted with the carbonate rocks. The Humber Zone contains well known deposits of zinc, including the Mississippi Valley-type Daniels Harbour deposit The eastern boundary of the Humber Zone is the Bay Verte line, the site of significant gold and asbestos mineralization. The zone extends the entire length of the island from St. Anthony to the Cape Ray area.
HYDROTHERMAL ALTERATION	The changes in composition and textures of a rock that result from a hot, aqueous fluid, called a hydrothermal fluid, passing through it. These hydrothermal fluids precipitate minerals formed from elements (including metals) that are dissolved within in them. The changes in mineralogy and texture of wall rocks surrounding ore (the alteration zone) are much more extensive - and in many cases, more obvious - than the ore itself. Recognizing the presence and hydrothermal alteration (and its exact nature) is an important prospecting and exploration guide to the discovery of ore bodies.
HYDROTHERMAL BRECCIA	Rock formed from material that had been brecciated or broken by the passage of hot fluids and gasses that are directly or indirectly related to magmas. These may contain rounded or angular fragments of one or many types, and may be either matrix-rich or matrix-poor. The matrix is typically altered. Hydrothermal breccias are located near (or in some cases host) a number of different types of mineral deposits.

I

I. P. SURVEY	A ground-based electrical survey designed to measure the electrical resistance (resistivity) or rocks to a current placed into the ground. Metallic sulphide minerals conduct electric current and can be often show up as a zone of anomalously low resisitivity. An IP survey can identified buried sulphides by measuring if, and how long, rocks hold a specific type of electric charge. Sulphide minerals are chargeable and therefore show up well on an IP survey.
IAPETUS OCEAN	Another name for the proto-Atlantic Ocean.
INCLUSION	A rounded or angular fragment of any (usually older) rock type, of any size,

	within an igneous rock. The term "xenolith" is often used as another word for inclusion.
ISLAND ARC	A curved belt of volcanic islands that formed above a subduction zone, the Japanese and the Aleutian Islands are examples of island arcs; many of the rocks in the Dunnage Zone of central Newfoundland formed in an ancient (500-450 million year old) island arc.
IRONSTONE or CLINTON TYPE IRONSTONE DEPOSITS	Deposits granular or oolitic, iron-rich sedimentary rocks containing brown or red oxidized iron. Over 80 million tons of iron were produced from these type of deposits found on Bell Island and in the subsurface under adjacent Conception Bay. These type of deposits form in a stable continental shelf environment, where they were deposited with shale, siltstone and limestone. Unlike the Lake Superior type iron deposits, such as those in Labrador, these ironstones do not represent important sources of iron in North America.

J

JASPER	A red variety of chert. The red color comes from many tiny included hematite grains.
JOINT VENTURE	A formal partnership which exists between individuals or companies for the length of a specific project.

K

KUPERSCHIEFER TYPE COPPER DEPOSITS	Deposits of disseminated copper found within sedimentary rocks, typically at the boundary between reduced (green-grey) and oxidized (red) sediments at or near the contact between marine sediments and underlying redbeds. The deposits form in ancient oxygen-starved sedimentary basins. Silver and cobalt are important by- products of this type of sediment-hosted copper deposit.
KUROKO TYPE DEPOSIT	A type of concordant massive sulphide deposit found in submarine felsic volcanic rocks in island arcs. The deposits typically contain (banded or massive) pyrite, sphalerite, galena and chalcopyrite lenses (massive or banded), underlain by low-grade stockwork zones. Barite is a common accessory. Mineralization is sited near centres of felsic volcanism which are defined by rhyolite domes or coarse-grained pyroclastic breccias ("mill-rock"). Quartz, sericite, and chlorite alteration is common near (under) the deposits. A wider alteration zone of clay minerals, albite and iron carbonate can occur, farther away from the deposit. The Buchans orebodies are a classic example of a Kuroko-type deposit.

L

LODE GOLD DEPOSIT	Deposits of disseminated copper found within sedimentary rocks, typically at the boundary between reduced (green-grey) and oxidized (red) sediments at or near the contact between marine sediments and underlying redbeds. The deposits form in ancient oxygen-starved sedimentary basins. Silver and cobalt are important by- products of this type of sediment-hosted copper deposit.
LIMESTONE	A sedimentary rock consisting mainly of calcite (calcium carbonate).

M

Ma	Abbreviation for "millions of years before the present".
MAFIC ROCK	A term usually used to describe an igneous rock dominated by dark coloured, ferromagnesian minerals (e.g., pyroxene and hornblende). Gabbros, basalts and diabase are examples of mafic rocks (ferromagnesian minerals are those rich in iron and magnesium).
MAGMA	Molten rock, formed within the inner parts of the Earth, which crystallizes to form an igneous rock.
MAGMATIC SULPHIDE DEPOSIT	A deposit - usually of nickel, copper, cobalt and /or platinum group elements - that is found in mafic or ultramafic igneous rocks (e.g., gabbro, troctolite, etc.). The metals were concentrated into ore-grade accumulations when the igneous rocks was still liquid (a magma) and buried deep in the crust. Because the sulphides form at specific times as the magma cooled, they are associated with particular rock types within the larger host igneous intrusion. Unlike VMS and epithermal deposits, magmatic sulphide deposits can form without hot hydrothermal fluids, and are not associated with wide zones of hydrothermal alteration. Voisey's Bay is a classic magmatic sulphide deposit. Magmatic sulphide deposits represent important prospecting targets in several parts of Newfoundland and Labrador, including the "Nain Plutonic Suite" of eastern Labrador, and "Grenville Province" of southern Labrador and the Northern Peninsula of Newfoundland.
MAGNETIC ANOMALY	The amount by which a measurement of the local magnetic field intensity varies from the intensity of the global magnetic field. If it is greater, it is a positive anomaly; if it is less, the anomaly is negative.
MAGNETOMETER	A geophysical instrument used to record disturbances in the earth's magnetic field. These disturbances are caused by magnetically susceptible (magnetic) rocks. Measuring the magnetic variation in an area helps define rock units and faults but can be an important means of discovering ore with a distinct magnetic signature. Magnetometer surveys can be done from the air, on the ground, or underwater.
MARBLE	Metamorphosed limestone or dolomite.
MASSIVE SULPHIDE DEPOSIT	A mineral deposit consisting almost entirely of sulphide minerals. The Buchans, Rambler and Duck Pond deposits are examples of massive sulphide deposits that are hosted by volcanic rocks. These deposits are typically referred to as volcanogenic massive sulphide (VMS) deposits. Central Newfoundland (Dunnage Zone) is viewed by many as the most highly prospective part of the province for VMS deposits. Not all massive sulphide deposits are volcanic-hosted. For example, the Voisey's Bay deposit contains massive sulphides, but is a magmatic sulphide deposit.
METAMORPHISM	The processes or changes, over time, in the mineral composition and structure of rocks caused by pressure and temperature.
MISSISSIPPI VALLEY TYPE DEPOSIT	Deposits of lead and zinc found in carbonate rocks, typically in dolomites within thicker limestone sequences. Mineralization (sphalerite and galena) is sited primarily in rocks in which a secondary porosity is well developed. There is little alteration associated with these deposits although the presence of crystalline dolomite in open pore spaces and fractures in the carbonate rocks serves as a good prospecting tool. The Daniel's Harbour zinc deposits of

	western Newfoundland is an example of a Mississippi Valley type deposit. This type of deposit represents an important prospecting target on the Northern Peninsula.
MUDSTONE	A fine-grained sedimentary rock consisting mainly of clay mineral particles.
MYLONITE	A highly deformed ductile fault rock with a banded structure produced by extreme shearing. The original rock textures were destroyed during intense dynamic metamorphism. Some fine-grained mylonite resemble either rhyolites or cherts and can be easily confused with those rock types. A fault defined by mylonite is also known as a mylonite zone.

N

NET SMELTER RETURN	A gross royalty based on revenue; it is a percentage (usually 1 to 3%) of the value of all mineral production from the mineral property that is shipped from the smelter.
NORITE	A mafic intrusive rock similar to gabbro. Norites contain more of the mafic mineral hypersthene (an orthopyroxene).
NORMAL FAULT	A fault (brittle or ductile) where the hanging wall block is offset downward relative to the foot wall block. Movement occurs down the dip of the fault.

O

OCEANIC CRUST	That part of the crust underlying the ocean basins. It is usually composed of basalt and gabbro and is about 5 km thick.
OPHIOLITE	A suite of mafic and ultramafic rocks and associated marine cherts (and their metamorphic equivalents), that together represent a cross-section through parts of an ocean's crust and upper mantle; a fossilized piece of oceanic crust. The ophiolites in Newfoundland are fault slices of the oceanic crust below the ancient Iapetus Ocean.
OPTION AGREEMENT	A legal and binding agreement that outlines the terms under which the optionee (e.g. a company) explores or develops the mineral property of the optionor (a prospector), and the terms under which they can increase their interest in the property. The agreement outlines the amount and scheduling of cash payments, the exploration expenditure commitments and the royalty agreements, and clauses outlining how the property can be maintained, bought out or dropped.
ORDOVICIAN	The name given to the interval or period of geological time from about 495 to 440 million years ago.
ORE	Natural occurring mixture of minerals (or a mineral) that can be mined and sold for a profit, or from which one or more minerals can be profitably extracted.
ORE RESERVES	That part of a mineral deposit that can be mined for profit. Reserves are defined after all the geological, engineering factors are reviewed and economic and environmental parameters that might affect on profitability of the operation are clearly understood, normally after an comprehensive feasibility study has been carried out.

OREBODY	Commercially viable mass of mineralization, the mass, grade and limits of which have been determined.
OROGEN	Intensely deformed crustal-scale belt, linear to arcuate in plan, normally containing a mountain chain. It is typically formed by the collision of two or more of the earth's large lithospheric plates. Orogens contain internal zones characterized by rocks produced by metamorphism and igneous activity, and include thick and complex successions of a wide variety of sedimentary rocks, formed in differing tectonic environments.
OROGENY	A collective term that denotes plutonism, metamorphism and deformation occurring over several tens of millions of years, usually within a mountain belt (or orogen), at or somewhere near a tectonic plate boundary in the earth's crust.
OVERBURDEN	All loose material (for example: soil, sand, gravel, peat and weathered rock) that lies above bedrock.
OXIDIZED	Affected by the process by which iron or other metallic elements in a rock or till react with oxygen and form new (residual) oxide minerals.

P

PANNING	The separation of heavier minerals such as gold and sulphides from lighter metals in stream sediment, loose soil or crushed rock using a pan-shaped container. Panning is a well- proven prospecting technique that is cheap and effective.
PYROXENITE	An ultramafic intrusive rock, composed mainly of the ferromagnesian mineral pyroxene.
PLACER DEPOSIT	A surficial deposit of heavy minerals or native metals (e.g., gold) formed by their mechanical concentration from weathered rock. A paleo-placer is its lithified equivalent. Some of the largest gold deposits in South Africa are paleo-placers.
PORPHYRY COPPER (± molybdenum ± gold) DEPOSIT	Intrusion-hosted copper (± molybdenum ± gold) deposits where mineralization occurs in thin quartz veins (stockworks), fractures and breccias, localized in the intrusions and in adjacent country rocks.. These deposits are typically low-grade but high-tonnage. Pyrite and chalcopyrite (± molybdenite) are the main sulphides; they occur with lesser amounts of bornite and magnetite. Typical host rocks are quartz diorite, granodiorite and quartz monzonite, which may or may not be porphyritic. Alteration minerals include quartz, sericite, biotite, K-feldspar, albite, anhydrite, magnetite, actinolite, chlorite, epidote, calcite, clays, and tourmaline. Hydrothermal alteration of the hostrock intrusions and wallrocks is prevalent, extensive and zoned. Potassic alteration (K-feldspar and biotite) occurs in the core of porphyry deposits This alteration can ringed by chlorite-rich (propylitic) alteration and quartz-sericite-pyrite (phyllic) alteration. Some porphyry deposits are overalin by epithermal (high-sulphidation) type deposits. Aeromagnetic maps are useful tools in prospecting for porphyries, as the (Cu-Au) ore zones can be associated with magnetite-rich rocks. The more intense quartz-pyrite-sericite (phyllic) alteration zones produce magnetic and resistivity lows. The Rencontre Lake, Frenchmans Cove, Colchester and Butlers Pond prospects are all examples of porphyry style mineralization. Porphyry deposits represent important prospecting targets in much of the

	Dunnage, Gander and Avalon Zones of Newfoundland.
PORPHYRITIC	A texture found in igneous rocks where larger crystals (phenocrysts) are surrounded by fine-grained glassy material (matrix).
PROTO-ATLANTIC OCEAN	Equivalent to Iapetus Ocean: the ancient ocean that existed between about 400 and 500 million years ago, separating the continents that later collided (as a result of plate tectonic motions) to form the Appalachian orogen. Relics of the old ocean floor of the proto-Atlantic are preserved within ophiolites of the Dunnage Zone. Many of the VMS deposits of central Newfoundland formed within island arcs in the same proto-Atlantic Ocean.

Q

QUARTZ-CARBONATE VEIN GOLD DEPOSIT	A gold deposit in which gold occurs (usually without other metals) in quartz and carbonate veins associated with faults and shear zones. These deposits (a type of lode gold deposit) occur in deformed and metamorphosed volcanic, sedimentary, and granitoid rocks. Gold occurs in the veins or disseminated in altered wall rocks immediately adjacent to the veins. Major fault structures occur throughout metamorphosed terranes in Newfoundland and Labrador and represent prospective ground for these type of deposits.
QUARTZITE	Granular sedimentary rock formed mainly of quartz (sometimes called a quartz arenite), or its metamorphosed equivalent.

R

RECRYSTALLIZED	An adjective used to denote a rock affected by the growth of new mineral grains. The material for the new growth comes from pre-existing grains.
REDBED-TYPE COPPER DEPOSIT	Disseminated sediment-hosted copper deposits that occur primarily in reduced (as opposed to oxidized) rock units within sequences of continental red-beds. Mineralization occurs at the transition (vertical or sidewaysl) between grey-green and red varieties of sandstone, siltstone and quartzite. Silver can be an important by-product. Many parts of the Avalon Zone contain rocks that prospective for several types of redbed copper deposits.
REGOLITH	A layer of unconsolidated broken rock material covering solid bedrock.
REVERSE FAULT	A fault (brittle or ductile) where the hanging wall block is shifted upward relative to the foot wall block. The movement occurs up the dip of the fault.
RHYOLITE	A felsic or silica- (and potassium-feldspar) rich volcanic rock. Rhyolites are the extrusive equivalents of granite. They are typically light colored but can be dark red or brown - because of oxidization - if they were erupted in a subaerial environment.

S

SANDSTONE	A sedimentary rock formed by cemented grains of sand. The sand

	fragments can be set in a fine-grained matrix of silt or clay.
SCHIST	A foliated, crystalline metamorphic rock that can be readily split into thin flakes or slabs along which visible metamorphic minerals have grown.
SEDEX DEPOSIT	"Sedex" is an abbreviation for "sedimentary exhalative sulphides". These are stratiform sulphide deposits of zinc, lead and silver that are concordant or parallel with their host sedimentary rocks. They form at or near the floor of submarine marine sedimentary basin, where the metals are deposited from hot, metal-rich (hydrothermal) fluids. These fluids originate from the sediments themselves. Sedex deposits form near "normal faults" that were active at the time the sediment were being deposited into an opening basin. (syn-sedimentary faults). They form in areas of "extensional tectonism" and "high heat flow". Ancient examples of similar extensional basins occur in Newfoundland, and are locally coincident with areas of anomalous lake sediment (e.g., Carbonear and Fermeuse areas of the Avalon Peninsula; the Humber Arm north area of west Newfoundland, and large parts of Notre Dame Bay). The Sullivan Mine in B.C. is a world-class example of a Sedex deposit.
SERPENTINITE	A rock consisting mainly serpentine-group minerals, derived from the alteration of mafic minerals such as olivine and pyroxene.
SHALE	A fine-grained sedimentary rock composed from clay or mud particles.
SILICEOUS	Refers to a rock rich in silica. Siliceous rocks are typically difficult to scratch with steel. Coarse-grained siliceous rocks have free quartz.
SILTSTONE	A clastic sedimentary rock similar in composition to mudstone, but slightly coarser grained.
SILURIAN	A name given to the interval or period of geological time from about 440 to 415 million years ago.
SLATE	A compact, fine-grained metamorphic rock - originally a shale, siltstone or fine-grained sandstone - that splits into slabs and thin plates, along evenly spaced, parallel cleavage planes. Most slates form from deformation and (low-grade) metamorphism of shale.
STOPE	An underground opening in an mine from which ore has been or is being extracted.
STRIKE	The compass direction (as measured in degrees from true north) of the horizontal line formed by the intersection of horizontal line marking the intersection between a horizontal plane - namely, the Earth's surface - and the inclined plane (for example: a geological structure such as fault, foliation, ore bed, etc.).
SULPHIDE MINERALS	(or "sulphides") minerals in which the metallic elements (Cu, Ni, Mo, Zn, etc.) are chemically bound to sulphur. Arsenopyrite (arsenic), chalcopyrite (copper), pyrite (iron), sphalerite (zinc) are all examples of sulphide minerals.
SYENITE	A granite-like intrusive rock containing alkali feldspar, with minor plagioclase and mafic minerals. It is distinguished from granite by the very small proportion or absence of quartz.
SYNCLINE	A type of bowl-shaped fold that is, or once was, concave upward, with its

limbs dipping towards its axis (core or centre). The youngest rocks in an syncline occur in its central part or core.

T

TECTONICS	A general term that refers to the large-scale movements and deformation of the Earth's crust.
TILL	An unconsolidated sediment containing all sizes of (typically rounded) fragments from clay to boulders carried by an ice sheet, and then deposited as the ice sheet melts and retreats.
TONNAGE	The quantity of ore that makes up an ore body.
TRACHYTE	A fine-grained, porphyritic volcanic rock, consisting mainly of alkali feldspar and minor mafic minerals; the extrusive equivalent of syenite. Trachytes have a distinct texture defined by the presence of large bladed crystals of plagioclase feldspar.
TUFF	A consolidated volcanic rock composed of a variable mixture of pyroclastic rocks fragments, crystals, pumice and fine ash.
TURBIDITE	A fine-grained clastic sedimentary rock deposited in a marine enviroment (normally a continental shelf or arc-related basin, but also in lakes). Turbidites typically show graded bedding and well developed sedimentary structures on the undersides of the sandy beds.

U

ULTRAMAFIC ROCK	An igneous rock composed chiefly of mafic (ferromagnesian) minerals. Dunites, peridotites and pyroxenites are all examples of ultramafic rocks.
UNCONFORMITY	A geological boundary or contact between two or more rocks of significantly different ages. Unconformities define a gap in the geologic record. When there is a difference in the dip of the rocks above and below the unconformity, the boundary is called an angular unconformity.

V

VMS DEPOSIT	See VOLCANOGENIC MASSIVE SULPHIDE (VMS) DEPOSIT.
VESICLE	A cavity in a volcanic rock formed by a bubble of escaping gas when the lava was still fluid.
VOLCANIC REDBED DEPOSIT	Concordant deposits of copper (typically as chalcocite, bornite and native copper) found in volcanic rocks deposited in subaerial conditions. The typical host rock is basalt. Mineralization may be disseminated, in veins, in amygdules or flow breccias. The deposits form in association with redbed copper deposits in some areas. These deposits can be difficult prospecting targets because they have no alteration associated with them. The Avalon Zone contains examples of volcanic redbed copper mineralization and is currently considered a highly prospective region for this type of copper deposit.

VOLCANOGENIC MASSIVE SULPHIDE (VMS) DEPOSIT	A mineral deposit that formed at or near the sea-floor, by the deposition of metals from hot, metal-rich fluids formed by heating salt water that percolates downward, deep into the volcanic rocks under the sea-floor. Hot intrusions below these volcanic rocks heat the waters, which then circulate back up to the sea- floor.