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METALLOGENY OF NEWFOUNDLAND GRANITES - STUDIES IN THE WESTERN WHITE BAY AREA AND ON THE SOUTHWEST COAST

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ABSTRACT

Gold prospects in the Silurian Sops Arm Group, White Bay area, are briefly described, and it is suggested that they may have formed in epithermal-fumarolic environments. In addition, potential exists for gold mineralization associated with carbonate-altered ultramafic rocks along lineaments. A fluorite occurrence is described from the Devils Room Granite.

Molybdenite and fluorite occurrences are briefly described in the Isle Aux Morts Brook and Strawberry granites, southwest coast of Newfoundland. Anomalous radioactivity is present in the Peter Snout and Rose Blanche east granites. The gold-bearing environments in the Cape Ray area are summarized, and additional potential for gold is noted in the Port Aux Basques Gneiss and in the Bay Du Nord Group.

INTRODUCTION

A project on the metallogeny of Newfoundland granites was initiated in April of 1985. The objectives are to assist in the development of metallogenic models for granitoid mineralization in Newfoundland using a combination of geological, lithogeochemical, and isotope techniques. An essential part of the project is to document, and further define, all of the known granitoid mineralization on the island, and to identify additional plutons or areas which have potential to host granite-related mineralization. Commodities of interest are Sn, W, U, Mo, Bi, Be, Li, Sb, F, Ta, Zr, Y, Nb, Rare Earth elements, and Au.

The 1985 season was primarily spent investigating possible relationships between granitoid rocks and gold mineralization. Field work was conducted in the Sops Arm area during June, and on the Southwest coast during July and August (Figure 1). This work was performed on a reconnaissance basis, and therefore the comments presented below are subject to substantial modification as further data are obtained.

WESTERN WHITE BAY AREA

Introduction

The possible relationship of granitoid rocks to gold bearing epithermal-fumarolic systems is under investigation in the western White Bay area (Figure 2). A lithogeochemical survey of the plutonic rocks is in progress, and a suite of samples was collected to initiate a geochronological study. The geology of Paleozoic rocks in this area is summarized by Smyth and Schillereff (1981, 1982), and the geology of the Grenville terrane is described by Erdmer (1986). Figure 2 was drawn from these sources.

Jackson's Arm Area

Anomalous gold mineralization of possible Late Precambrian age, located on and near the Cat Arm access road west of Jackson's Arm, is described and discussed by Tuach and French *(this volume)*. The host to the mineralization and alteration is a late Grenvillian, foliated, megacrystic granodiorite, informally called the French-Childs granodiorite.

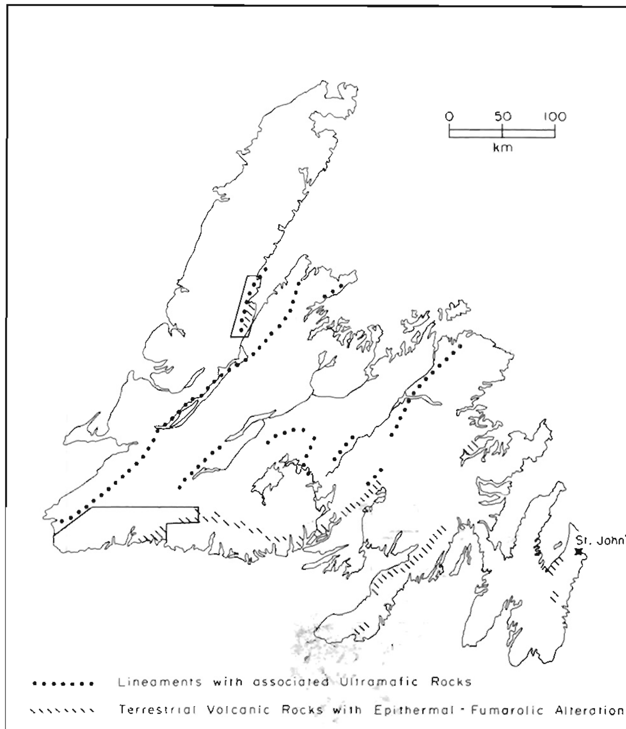

Figure 1: *Location of field areas. Also shown are areas with recognized potential to host lode and/or epithermal-fumarolic gold deposits.*

This project is a contribution to the Canada-Newfoundland Mineral Development Agreement, 1984-1989

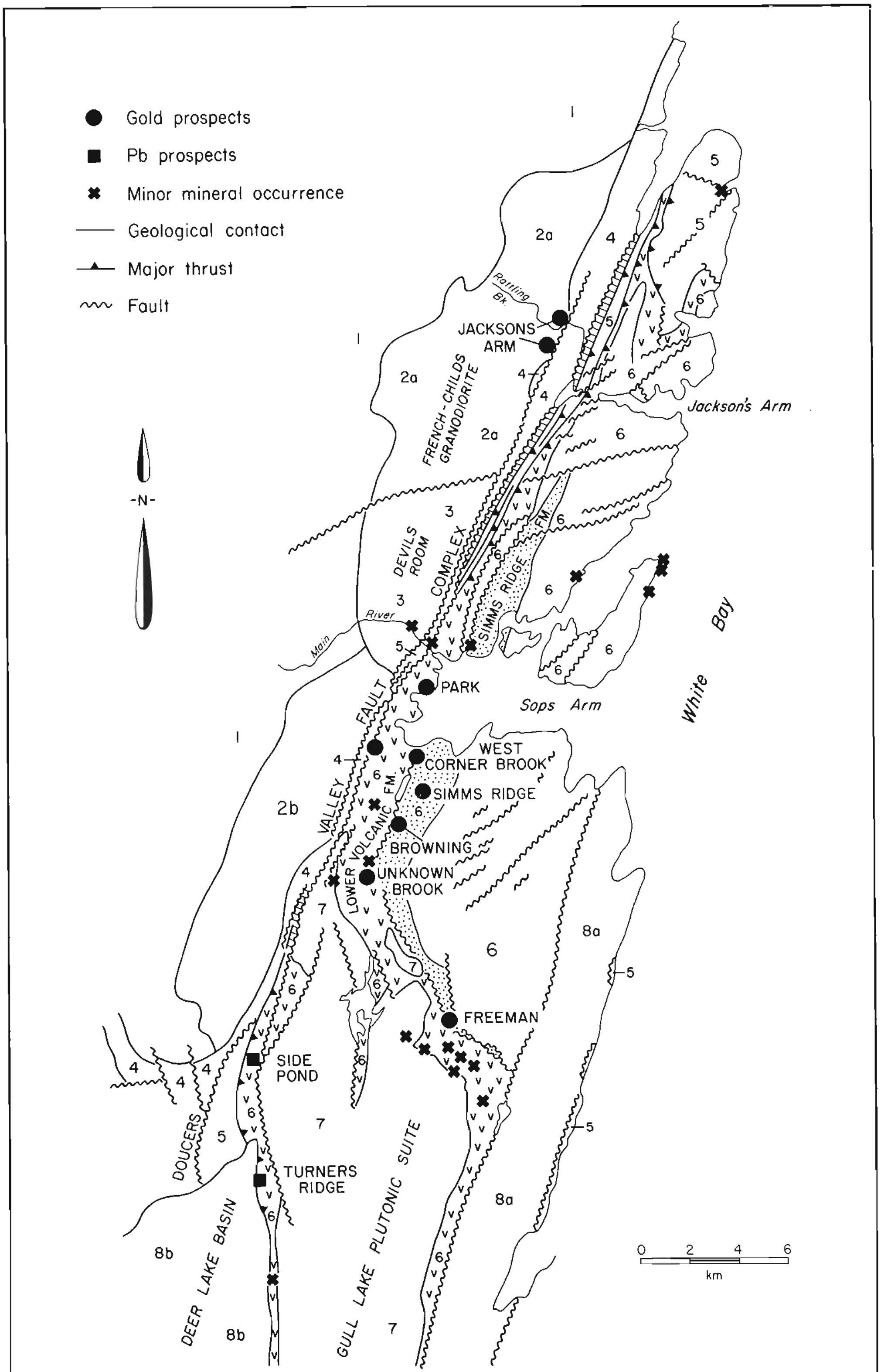

Figure 2: *Geology of the western White Bay area; after Smyth and Schillereff (1982) and Erdmer (1986). The Lower Volcanic Formation and the Simms Ridge Formation of the Sops Arm Group are patterned.*

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LEGEND

UPPER PALEOZOIC (Basin Fill Sequences and Intrusions)

CARBONIFEROUS

8 8b, Deer Lake Group (Visean);
8A, Anguille Group (Tournasian)

DEVONIAN OR EARLIER?

7 Gull Lake Intrusive Suite

SILURIAN

6 Sops Arm Group

LOWER PALEOZOIC ALLOCHTHON

CAMBRIAN - MIDDLE ORDOVICIAN

5 Southern White Bay Allochthon—partially ophiolitic; mélange containing ultramafic blocks is cross-hatched.

LOWER PALEOZOIC AUTOCHTHON (Platform)

CAMBRIAN - MIDDLE ORDOVICIAN

4 Coney Arm Group

PRECAMBRIAN (Grenville basement)

LATE PROTEROZOIC(?)

3 Devils Room Granite [1] - massive, unfoliated.

MID PROTEROZOIC AND EARLIER (>1105 ± 90 Ma)

2 Massive to foliated, megacrystic, granitoid plutons
2a: French-Childs granodiorite; 2b: granite.

1 Leucocratic gneiss, amphibolite and gabbro.

Devils Room Granite

Fluorite mineralization occurs in the Devils Room Granite[1] as fracture coatings up to 1 cm thick, and in a fine grained silica-fluorite matrix to a 1 m wide, vertical tuffisite vein. The mineralization is developed in a medium to coarse grained, orange to red, equigranular phase of the granite which has been exposed in the new forest access road on the north side of Main River. Areas with white clay alteration up to 50 m wide are present in the new roadcuts. These features probably reflect a late stage, relatively low-temperature, hydrothermal event during cooling of the granite. Fluorite fracture coatings were also reported in the Devils Room Granite by Smyth and Schillereff (1982). A 1 m chip sample across the tuffisite vein returned an analysis of 15 ppb Au.[2]

The relationship of the Devils Room Granite, including its alteration and mineralization features, to the gold mineralization in the Jackson's Arm area is unknown. Possibilities are discussed by Tuach and French *(this volume)*.

[1] A recent U/Pb (zircon) date from the Devils Room Granite indicates a Lower Devonian Age (P. Erdmer, personal communications, 1986.

[2] Fire assay preconcentration with neutron activation analysis by Chemex Labs Ltd., Vancouver.

Unknown Brook, Browning, and Simms Ridge Prospects - Possible Silurian Epithermal-Fumarolic Activity

A massive pyrophyllite zone up to 15 m thick is developed at Unknown Brook (Snelgrove, 1935) and is associated with pervasively altered zones of sericite, chlorite and carbonate-magnetite. Quartz-carbonate veins are present in the pyrophyllite and sericite-altered areas, and quartz-feldspar-pyrite veins occur in the relatively unaltered silicic tuffs which host the alteration zone. The silicic volcanic rocks are interpreted as forming the lowest unit of the Sops Arm Group (Smyth and Schillereff, 1982).

At the Browning Prospect, located in the Simms Ridge Formation, the bottom part of the exposed section consists of massive siderite beds up to 1 m thick, which are commonly profusely spotted with green mica. These are overlain by a thin chlorite-schist unit (which may represent a shallow thrust zone) and which is in turn overlain by a thicker pyrophyllite-sericite alteration zone. Quartz-carbonate veins are common and locally contain abundant pyrite, chalcopyrite, and minor gold (Snelgrove, 1935). Lenses of laminated, impure chert, up to 15 cm thick and 5 m long, and containing fine grained disseminated pyrite and galena as well as fracture-controlled pyrite and galena, occur above the carbonate beds. Chips of this rock were analysed and gave a value of 65 ppb Au. Siderite cubes in the overlying shales of the Simms Ridge Formation become more abundant toward the areas of mineralization. Plate 1 illustrates a small alteration zone about 200 m upstream from the Browning Prospect.

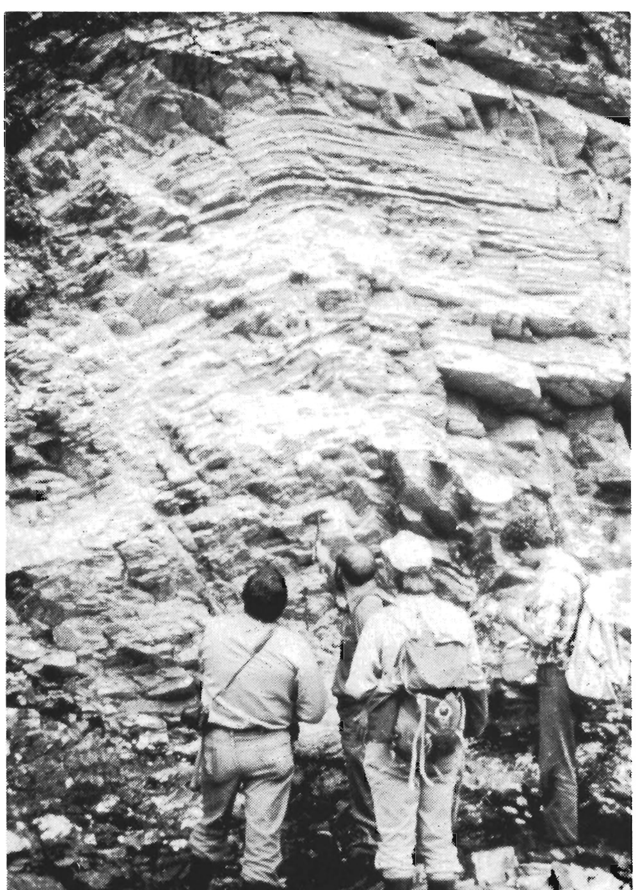

Plate 1: *Pyrophyllite(?) alteration (white), adjacent to a fracture in shales which contain thin, resistant, carbonate beds, Browning Prospect.*

Minor galena and pyrite occur in the Simms Ridge Formation at Simms Ridge and are hosted by quartz-carbonate veins, and minor disseminated pyrite occurs in tuffs which have been subjected to intense carbonate alteration. Siderite grains (Plate 2) in the overlying shales increase in abundance toward this prospect. Gold values are reported from this area by Snelgrove (1935).

Plate 2: *Siderite spots (cubes) on surface of shale from the Simms Ridge area.*

The Unknown Brook, Browning and Simms Ridge prospects, and their host rocks, exhibit extensive and intense alteration features over a strike length of 4 to 5 km. They also demonstrate elements of the classic epithermal-fumarolic hostsprings model (Spence *et al.*, 1980; Buchanan, 1981; Berger and Eimon, 1983). This idealized model (Figure 3) suggests that a unique unidirectional set of alteration assemblages are developed as a result of acid leaching at sites of meteoric fluid discharge, particularly in terrestrial silicic volcanic terranes. The meteoric systems are established in response to high level magmatic activity, which is commonly associated with caldera environments and/or major lineaments. The dominant alteration consists of pervasive cryptocrystalline silica (locally sinter) overlying high-alumina clay minerals, which in turn overlies sericite-rich rocks, and the entire system may be surrounded by an extensive zone of propylitic alteration (Figure 3). Gold is thought to be precipitated by boiling of the fluids, a phenomenon controlled by pressure, which is controlled by porosity.

These are dynamic and changing environments, and gold can be precipitated at any level. The formation of high-

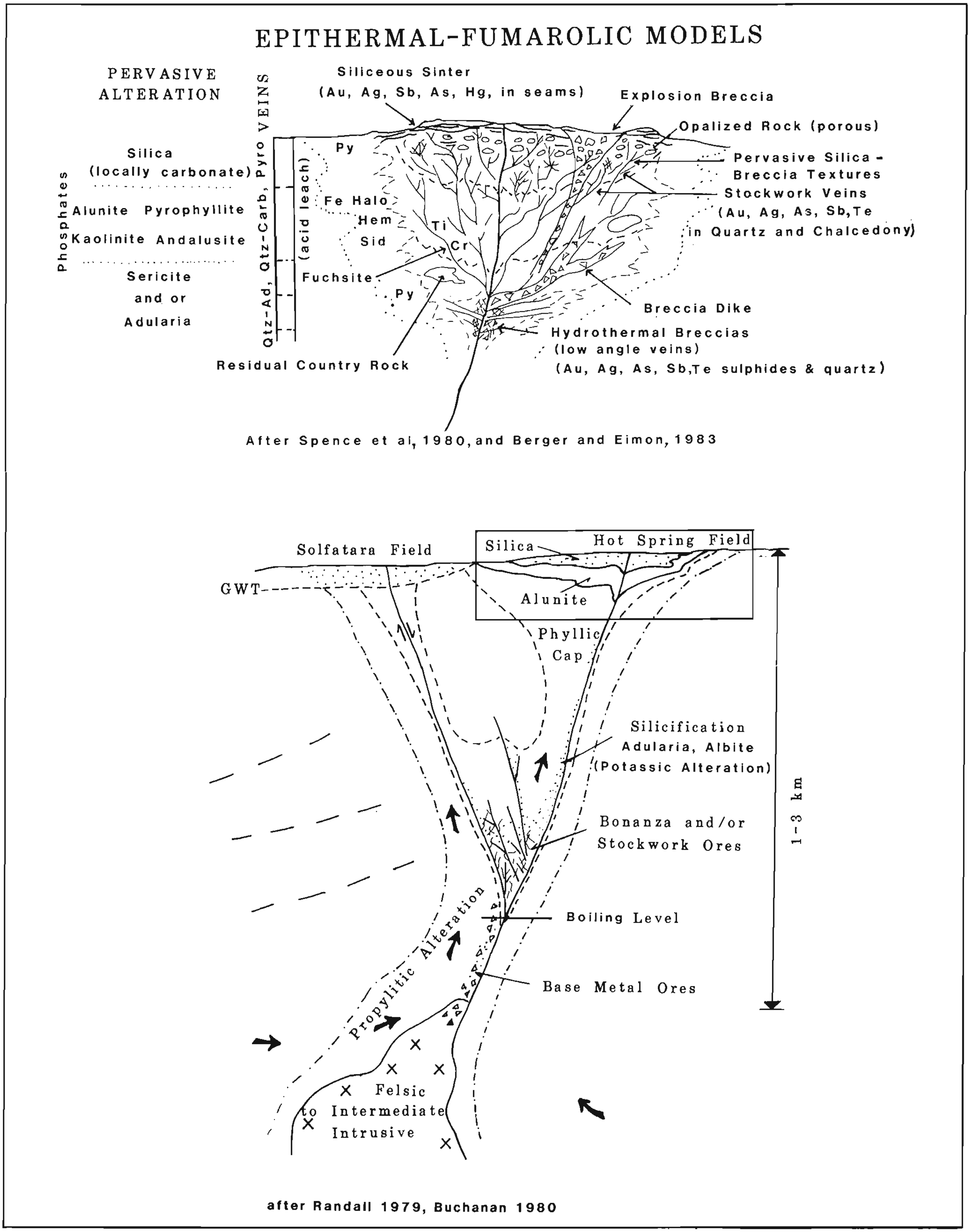

Figure 3: *Idealized alteration and structural features in epithermal-fumarolic systems. Sources of models are listed on diagrams. Note that these models are applicable to all of the areas with cross hatching shown on Figure 1 (including the La Poile Group on the southwest coast).*

alumina clay minerals is thought to be unique to acid-leach environments which only occur at or near surface. Carbonate-dominated systems may form in sediment-dominated basins, and carbonate terracing may develop (C. O'Driscoll, personal communication, 1985). These latter systems are not well documented.

The classic alteration assemblages occur at Unknown Brook and elements of the alteration package are present at the Browning Prospect. In the latter area, carbonate deposition at the base of the Simms Ridge Formation may have caused variations from the idealized patterns, expressed by the presence of siderite.

The distribution of siderite cubes with respect to known mineralization implies that they are related to hydrothermal alteration systems, which developed during and after deposition of the shales. These systems may also have introduced iron into the shales, a feature which may be equated with the extensive propylitic alteration halos that surround epithermal systems (Buchanan, 1981; Figure 3A). The Simms Ridge Formation is characterized by the presence of siderite cubes (Lock, 1969; Smyth and Schillereff, 1982), which may indicate that epithermal-fumarolic systems were active throughout the entire formation.

The presence of laminated, cherty, mineralized lenses at the Browning Prospect suggests that the mineralizing event was in part contemporaneous with deposition of the Simms Ridge Formation. Fossiliferous limestone beds occur about 200 m upstream and along strike from the Browning Prospect; these contain minor disseminated galena. The fossiliferous beds are probably of Silurian age (Lock, 1969), suggesting that the chert beds and hence the epithermal-fumarolic systems are also of Silurian age.

Plutonic rocks are abundant, and fine grained intrusive porphyries form an integral part of the volcanic sequence in the Sops Arm area. Possible association of mineralization and alteration with the Gull Lake Intrusive Suite has been suggested by previous authors (eg., Smyth and Schillereff, 1982). The age of the Gull Pond Granite is currently under investigation.[1]

Corner Brook and Park Prospects

The Corner Brook Prospect consists of anastomosing, quartz-filled, gash veins in a rhyolite porphyry. These veins contain minor pyrite, galena, and chalcopyrite, and minor gold values have been reported (Snelgrove, 1935).

A similar style of mineralization is present approximately 500 m south of the Main River in a north-facing quarry wall over a 30 m^2 area. Mineralization consists of stringer pyrite, minor chalcocite, and minor chalcopyrite in narrow quartz veins cutting rhyolitic tuff. Malachite staining also occurs locally. Chips from this outcrop were analyzed and gave a value of 120 ppb Au; the estimated copper content is less the 0.1 percent. A 30 cm wide vertical quartz vein, trending 020, outcrops for 20 m in an east-facing roadcut approximately 150 m south of the copper showing. Analyses of two chip samples from the vein returned values of 203 and 541 ppb Au. A second parallel vein with a strike length of 2 to 3 m occurs about 25 m west of the road; minor pyrite and galena are present, and a sample of chips from the vein gave an analysis of 2730 ppb Au. The Park Prospect is a new name proposed for the collective showings in this area.

Minor pink-feldspar alteration is associated with the gash vein style of mineralization and sericite is present locally. These veins may represent deeper levels of mineralization (Figure 3; Buchanan, 1981) than the Unknown Brook, Browning and Simms Ridge prospects.

Other Mineralization and Alteration

A small deformed pyrophyllite alteration zone is present at UTM grid reference 044098 in the Hampden map area, (12H/10). A 40 cm wide chloritic shear zone containing minor quartz veins, and a 40 cm wide quartz vein containing minor galena, pyrite and chalcopyrite occur at UTM grid reference 045096, NTS 12H/10. Both of these are in west-facing roadcuts on the main road south of Sops Arm. Chips from the shear zone and the quartz vein gave values of 992 and 880 ppb Au respectively.

Carbonate rocks (Unit 1a of Smyth and Schillereff, 1981, 1982; UTM grid reference 038832, NTS 12H/10) at the southeast margin of the Gull Pond Intrusive Suite contain hematite veins, asbestiform minerals and tremolite(?), which represent a skarn mineralogy. Two samples submitted by the author for multi-element scans did not return anomalous values for minerals of economic interest.

The quartz-magnesite-talc-fuchsite rocks reported by Smyth and Schillereff (1981, 1982; Unit 14) near Jackson's Arm probably represent severely deformed and altered ultramafic rocks. They are associated with rocks of oceanic affinity which occur in a narrow, linear, fault-bounded belt in the map area (Williams, 1977; Smyth and Schillereff, 1982). These rocks and associated faults may form part of the Doucers Valley Fault System (Lock, 1969) and may have a fundamental control on regional mineralization (for further discussion, see Tuach and French, *this volume)*. Two large boulders (2 to 3 m across) of virginite (Newfoundland's mariposite) were noted by V. French (personal communication, 1985) along the trace of this lineament between Jackson's Arm and Sops Arm. Bulk chip samples were collected by the author across three lenses of the quartz-magnesite rock at its northern end near Jackson's Arm. The central lens returned an analysis of 24 ppb Au across 10 m. The other lenses had values of less than 1 ppb. Comparable alteration and tectonic features are present in the Mother Lode district of California (Albers, 1980; Landefeld, 1985).

Massive, dark grey colored, brown weathering rocks exposed in roadcuts approximately 1 km south of Main River Park contain a large volume of carbonate (ankerite?). A sample of chips from the northern exposure gave an analysis of 521 ppb Au.

[1] A recent U/Pb (zircon) date of 390 Ma has been obtained by P. Erdmer (personal communication, 1986)

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SOUTHWEST COAST

Introduction

Lithogeochemical sampling and reconnaissance work were performed in the area mapped by Brown, (1976, 1977), and Chorlton (1978, 1980a, b, 1983), on Newfoundland's southwest coast. Figure 4 is a geological summary of their work taken from the mineral occurrence compilation map (Newfoundland Department of Mines and Energy Map 84-61; and from Sean O'Brien, personal communication, 1985). The reader is referred to these authors for details of geology and nomenclature. Most significant prospects on the southwest coast were visited during the summer. The prospects in the La Poile Group are not discussed in this paper, however the model presented in Figure 3 may be applicable.

Granitoid rocks which are spatially and possibly genetically associated with significant mineralization, and from which no previous chemical data are available, were sampled in the southwest coast area. The Ordovician(?) Roti Granite was sampled in the La Poile (110/9) map area (Roti west[1]) and in the Peter Snout (11P/13) map area (Roti east[1]). The Devonian Chetwynd Granite was sampled in the La Poile River (110/16) and Peter Snout map areas, and the Silurian(?) Ironbound Hills, Peter Snout, and Rose Blanche east[2] plutons were sampled in the La Poile River and Peter Snout map areas.

A relatively large number of analyses are available from the Silurian(?) Hawks Nest Pond Porphyry and the Ordovician(?) Baggs Hill Granite (Chorlton, 1980b). Analyses from the Devonian Windowglass Hill Granite and the Devonian-Carboniferous Strawberry and Isle Aux Morts Brook granites are reported by Wilton (1984). A compilation of all geochemical data on granitoid rocks may be of interest to companies exploring for gold in this area.

Granophile Mineralization in the Cape Ray Area

Minor molybdenite is present as disseminations in a small (1 m long) aplite vein adjacent to the northwestern margin of the Isle Aux Morts Brook Granite (UTM grid reference 496865, NTS 110/11; Wilton, 1984). Minor disseminated molybdenite also occurs in quartz veins (10 cm wide) within the granite at this locality. These veins are rare, widely spaced, and contain minor pyrite and possibly minor galena. Two, subvertical, tuffisite-breccia veins, up to 1 m wide and cemented by massive to banded cryptocrystalline silica, are exposed over a strike length of 10 m in a stream bed. The host granite is medium grained, orange, miarolitic, and alkali-feldspar bearing, and is typical of Late Devonian-Carboniferous posttectonic plutons of anorogenic affinity in the area (Wilton, 1985a). The contact between the granite and a possible roof pendant of retrogressed Port Aux Basques Gneiss is exposed at this locality (Wilton, 1984).

Fluorite is reported by Wilton (1984) at the northeastern margin of the Strawberry Granite (UTM grid reference 563918, NTS 110/15). It occurs in fractures and as matrix to well developed gas breccias which are dominantly cemented by massive and chalcedonic quartz. The breccia extends over a length of 200 m in Isle Aux Morts Brook. Minor disseminated molybdenite is also reported in fine grained granite at this locality (Wilton, 1984). The Strawberry Granite shows many similarities to the Isle Aux Morts Brook Granite.

Posttectonic, anorogenic, alkali-feldspar, biotite granites ('A'-type plutons, Collins *et al.*, 1982) are commonly associated with major mineral deposits (e.g., Climax, Colorado, White *et al.*, 1981; Mount Pleasant, New Brunswick, Taylor *et al.*, 1985) and host the Ackley Granite molybdenite and tin deposits in Newfoundland (Tuach *et al.*, 1986). The gas breccias, miarolitic cavities, and minor mineralization in the Isle Aux Morts Brook and the Strawberry granites indicate some potential for significant granitoid-related mineralization in these plutons.

Plutons with Anomalous Radioactivity

The Ironbound Hills Syenite and the Peter Snout Granite are massive, essentially posttectonic plutons (Dunsworth, 1981; Chorlton, 1980a), which exhibit high radioactivity from 3 to 5 times normal background (up to 1000 cps on an EDA GRS 500 spectrometer). Uranium mineralization in the Baggs Hill Granite and in the Bay Du Nord Group (Wells, 1981: O'Brien and Tomlin, 1985) may be genetically related to these plutons.

Precious Metals Associated with the Cape Ray Tonalite Complex

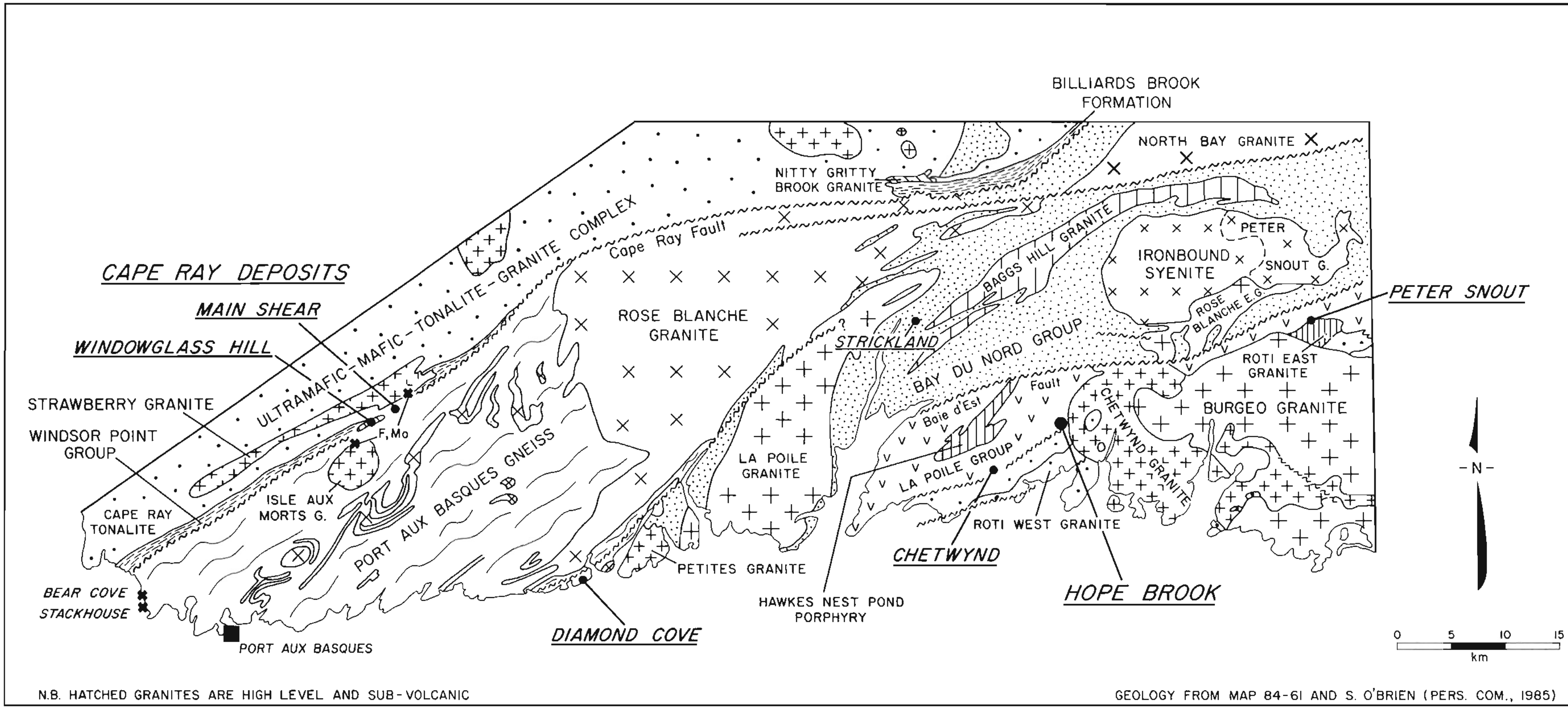
The Cape Ray Tonalite Complex occurs at the southern extremity of the Long Range ultramafic-mafic-tonalite-granite terrane shown on Figure 4, (Wilton, 1984).

Minor galena is present in the Bear Cove Showing at Red Rocks Point (UTM grid reference 263817, NTS 110/11), and occurs as several isolated oval-shaped (10 cm x 5 cm) aggregates. This mineralization occurs in a narrow north-northeast trending quartz vein (30 cm wide) at the margin of posttectonic porphyry dikes. The dikes cut foliated megacrystic granites of the Cape Ray Tonalite Complex. A sample of porphyry dike with minor disseminated pyrite, taken adjacent to the vein, returned analyses of 77 ppm Pb and 8 ppm Ag (D. Wilton, personal communication, 1985).

Two narrow (2 to 8 cm) quartz veins containing chalcopyrite and pyrite comprise the Stackhouse Showing (Wilton, 1984),which occurs on the shoreline approximately 200 m north of the lighthouse at Cape Ray (UTM grid reference 265706, NTS 110/11). The veins dip at 10 to 15 degrees to the southwest and cut foliated megacrystic granite

[1] The two outcrop areas of the Roti Granite as mapped by Chorlton (1978, 1980a) are separated by a distance of 25 km. They are informally called the Roti east and Roti west plutons for identification purposes.

[2] The Eastern exposures of the Rose Blanche Granite (Chorlton, 1980a; Dunsworth, 1981) are informally named the Rose Blanche east Granite.



CARBONIFEROUS

ALKALI FELDSPAR GRANITES ('A' - TYPE)

DEVONIAN

IRONBOUND HILLS SYENITE/PETER SNOUT GRANITE

WINDSOR POINT GROUP/WINDOWGLASS HILL GRANITE, NITTY GRITTY BROOK GRANITE? BILLIARDS BROOK FORMATION

SILURIAN

NORTH BAY GRANITE

BURGEO GRANITE, LA POILE GRANITE

ROSE BLANCHE GRANITE

LA POILE GROUP / HAWKES NEST POND PORPHYRY / ROTI E GRANITE

ORDOVICIAN

PORT AUX BASQUES GNEISS?

BAY DU NORD GROUP/BAGGS HILL GRANITE

CAMBRO-ORDOVICIAN

ULTRAMAFIC - MAFIC - TONALITE - GRANITE COMPLEX

Figure 4: *Summary of geology and location of selected mineral deposits on the southwest coast of Newfoundland. After Brown (1976, 1977), Chorlton (1978, 1980a, b, 1983) and S. O'Brien (personal communication, 1985).*

of the Cape Ray Tonalite Complex. Separation between the veins is approximately 15 cm, and they are connected by vertical, relatively unmineralized, quartz veins; the veins outcrop over an area of approximately 25 m^2. Chalcopyrite may be either concentrated along the vein margin or may occur as large pods in the vein. Wilton (1984) reported an assay value of 7.7% Cu, 1.03 ppm Au, and 69.9 ppm Ag from a grab sample. He also noted the presence of minor chalcocite and supergene covellite in polished thin section (D. Wilton, personal communication, 1985).

Both the Stackhouse and Bear Cove veins post date the penetrative deformation of the host rocks, and may be genetically related to magmatism and/or tectonism along the Cape Ray Fault Zone.

Major Gold Prospects in the Cape Ray Fault Zone

The Main Shear quartz-gold lodes (Plate 3) and the vein and stockwork prospects in the Windowglass Hill Granite (Plate 4) have been described by Wilton (1984, 1985b). A schematic drawing illustrating local geological features is presented in Figure 5. Wilton's models assume that the Devonian Windowglass Hill Granite was generated in the Cape Ray Fault Zone and suggest that the granite is a source for gold mineralization in this area. Graphitic host rocks, which are interpreted by Wilton to be part of the Devonian Windsor Point Group, are also interpreted by him to have formed a physiochemical trap which localized deposition of quartz and gold as the Main Shear deposits. Similar settings may occur elsewhere along the Cape Ray Fault zone, eg., in the vicinity of the Nitty Gritty Brook Granite.

Portions of the favourable graphitic zone in the vicinity of the Main Shear deposits have not been adequately tested by drilling. There is room to improve on reserve tonnage in this area.

Plate 3: *Main Shear gold-quartz lode (white) in a laminated and bedded, graphitic, sedimentary rock.*

Plate 4: *Stockwork quartz veins in the Windowglass Hill Granite.*

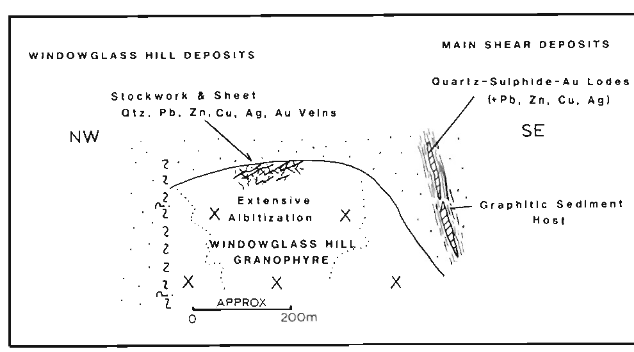


Figure 5: *Schematic diagram of geological and mineralization features at the Cape Ray gold deposits (after Wilton, 1984).*

Gold Potential in the Port Aux Basques Gneiss and the Bay Du Nord Group

The host to the Main Shear deposits is a penetratively deformed sequence of bedded to laminated mafic tuff, silicic tuff and pyroclastic rocks, mafic volcanogenic sedimentary rocks, and bedded and laminated graphitic shale (Plate 3). Rocks in drill core, logged as Port Aux Basques Gneiss, which are of amphibolite facies metamorphic grade, are comparable in lithology to the rocks logged as Devonian Windsor Point Group; a boundary cannot be readily identified between these two units in the drill core. It seems probable that the host rocks to the Main Shear deposits are part of a typical greenschist facies, sedimentary/volcanic, Ordovician assemblage which is correlative with the Port Aux Basques Gneiss, and possibly with the Bay Du Nord Group (see Chorlton, 1983).

This latter observation is important with respect to the exploration potential for lode-gold deposits in southwestern Newfoundland since it implies that formations other than the Devonian sequences, which are confined to the Cape Ray Fault zone, may localize gold deposition. Graphitic schists are present throughout the Bay Du Nord Group and may be present in the Port Aux Basques Gneiss. Crosscutting granites of various ages are ubiquitous in both of these units. In addition, there are numerous pronounced lineaments on the southwest coast of Newfoundland which may be of geological importance as loci of precious metal deposition.

The large quartz vein at Diamond Cove (Plate 5) has abundant graphite-coated partings and minor associated graphitic schist. It is reported to be auriferous and contains minor base metal mineralization (Snelgrove, 1935; Howse and Collins, 1984). In addition, it lies at or near a relatively large lineament which is depicted on Figure 3, and is spatially associated with the Rose Blanche Granite. The similarity in setting of the auriferous Diamond Cove vein and the Main Shear lode-gold deposits lends some support to the arguement that lode-gold deposits may be more widespread than previously recognized, and may suggest that further evaluation of the Diamond Cove area for gold is warranted.

Plate 5: *Diamond Cove Quartz Vein with graphitic sedimentary bands.*

The Windowglass Hill Granite is a high level pluton characterized by high Na_2O/K_2O ratios (see Appendix 1; Wilton, 1985b), which together with the stockwork and sheet quartz veins (Plate 4), and high Pb-Zn-Cu base metal values, imply the presence of a hydrothermal alteration zone (albitized area in Figure 5). Wilton (1984, 1985b) has argued that the Windowglass Hill Granite is a source of gold mineralization in the Cape Ray area. Analytical data presented by Chorlton (1980b; and Table 1) for the Baggs Hill Granite show that 11 out of 32 samples have strong sodium enrichment (one sample exhibits strong potassium enrichment and has been excluded from Table 1; compare to Wynne and Strong, 1984). The Baggs Hill Granite is a large, high level, granophyric and miarolitic subvolcanic pluton which merges with deformed volcanic pyroclastic rocks of the Bay Du Nord Group (Chorlton, 1980b). Three of the high sodium samples in this granite were collected within 1 km of the Strickland Prospect, while the others are scattered along the length of the granite. These features imply that the Na_2/K_20 ratio may be a powerful, primary, prospecting tool and that the Baggs Hill Granite and adjacent country rocks may have potential for hosting gold deposits.

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Note: Mineral Development Division file numbers are included in square brackets.

APPENDIX 1

Comparisons of Analyses from the Windowglass Hill Granite (Wilton, 1985a) and the Baggs Hill Granite (Chorlton, 1980b)

	Windowglass Hill N = 24		Albitized Baggs Hill N = 11		Relatively Unaltered Baggs Hill N = 20	
	$\bar{x}$	$\bar{s}$	$\bar{x}$	$\bar{s}$	$\bar{x}$	$\bar{s}$
SiO_2(wt%)	77.5	3.2	77.50	2.32	76.52	1.03
TiO_2	0.11	0.09	0.11	0.07	0.12	0.04
Al_2O_3	13.1	5.5	12.3	0.7	12.42	0.55
Fe_2O_3	1.0	0.7	0.48	0.31	1.1	0.4
MnO	0.02	0.01	0.02	0.01	0.02	0.01
MgO	0.16	0.26	0.15	0.11	0.15	0.09
CaO	0.71	0.85	0.69	0.46	0.30	0.13
Na_2O	5.6	3.1	5.44	0.64	4.10	0.34
K_2O	1.7	2.1	1.22	1.08	3.92	0.31
RO_5	0.02	0.03	0.01	0.01	0.03	0.02
V (ppm)	11	18	6	5	7	5
Cr	3	4	4	2	4	4
Ni	8	10	7	8	14	10
Cu	163	419	4	2	6	13
Zn	230	825	35	22	41	26
Ga	25	19	23	3	19	5
As	22	22				
Rb	46	66	47	44	130	60
Sr	118	142	57	14	63	41
Y	100	53	84	32	71	35
Zr	266	91	221	58	191	64
Nb	30	13	18	5	23	10
Ag*	2381	5639				
Ba	227	306	232	194	493	172
Au*	177	729				
Pb	452	977	11	6	18	11
La	19	38	44	14	34	26
Ce	76	61	87	31	83	28
Th	21	10				
U	4	4				

* These analyses reported as ppb.

$\bar{x}$ Mean

$\bar{s}$ One standard deviation