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The Qullinaaraaluk Ni-Cu-Co showing : a new type of mineralization in the Archean rocks of the Far North

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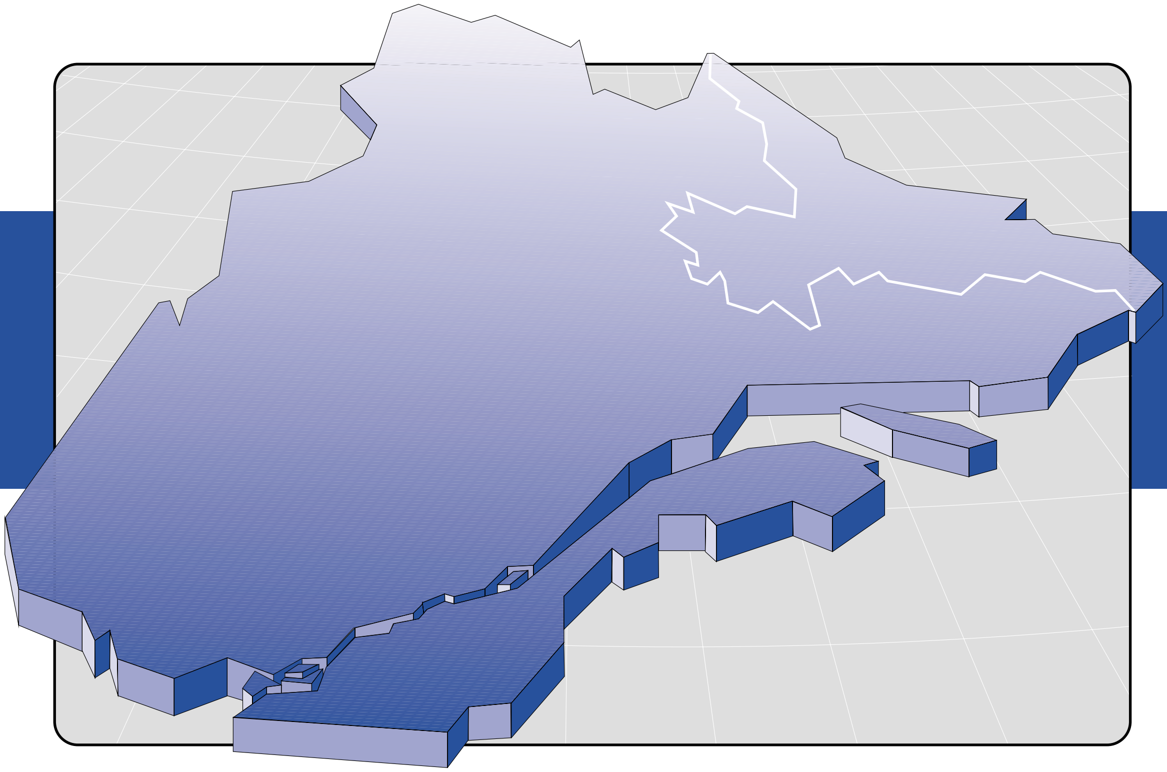

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INTRODUCTION

The Qullinaaraaluk Ni-Cu-Co showing was discovered in August 2000 during 1:250,000 mapping of the Lac Vernon and Lac Minto areas (Leclair and Parent, 2000; Parent and Leclair, 2000). It is located in the NE quadrant of the map area corresponding to sheet 34 G (34G/10), about 10 kilometres north of Lake Qullinaaraaluk (Figure 1), 225 kilometres SE of the town of Inukjuak and about 125 kilometres from the coast of Hudson Bay. Preliminary analytical results from massive sulphide samples collected when the discovery was made yielded up to 2.60 % Ni, 1.80 % Cu and 0.27 % Co. The mineralization is hosted in an ultramafic intrusion cross-cutting a diatexite unit.

With this discovery, intrusive ultramafic rocks now represent a new type of setting for nickel mineralization in Québec's Far North, where known Ni-Cu-Co-PGE deposits are commonly associated with komatiitic flows in greenstone belts. This document contains a preliminary description of the geology of the intrusion hosting the Qullinaaraaluk showing, along with the mineralization observed. We will also discuss other mafic and ultramafic intrusions encountered during our mapping program. These will be compared to the Qullinaaraaluk intrusion in order to identify possible similarities, and thereby assess their potential for the discovery of this type of mineralization.

GEOLOGY OF THE QULLINAARAALUK INTRUSION

The ultramafic intrusion hosting Ni-Cu-Co mineralization extends over about 750 metres in an ENE-WSW direction, over a width of about 250 metres. Its geometry, mapped using a GPS instrument, is presented in Figure 2. The intrusion mainly consists of massive olivine pyroxenite with a few peridotite horizons. Studies carried out in the area (2-3 days) did not uncover clear evidence of zoning in the intrusion. At a mesoscopic scale, the rock appears to be very homogeneous; variations are visible only in thin section, and are expressed as variations in the olivine content. Rocks in the eastern part appear to be more ultramafic (peridotite). Additional detailed mapping and sampling are required to fully outline the zoned nature of the intrusion.

The country rocks surrounding the mineralized intrusion consist of diatexites. These are migmatites in which the proportion of mobilizate derived from partial melting exceeds 50 % of the rock volume. These migmatites form a heterogeneous unit composed of three principal elements: 1) 50-95 % granodioritic to granitic medium to coarse-grained neosome; 2) 5-50 % enclaves of migmatitic paragneiss; 3) white or pink leucogranite bodies and sheets. Intercalations of these three elements in variable proportions result in a very heterogeneous diatexite unit, both at the mesoscopic and macroscopic scale. The diatexite forms, in several locations, hybrid zones with the paragneiss unit, which suggests it is most likely derived from the melting of a sedimentary protolith.

Ultramafic rocks forming the Qullinaaraaluk intrusion are massive and generally medium-grained. They are not deformed and appear to be unmetamorphosed. The intrusion clearly cross-cuts the regional foliation observed in diatexites. In the contact zone, this foliation does not follow the contacts of the intrusion but rather abuts on an undeformed, massive granular rock. The foliation appears to be disturbed only within less than a metre of the intrusive contacts. This observation, combined with the fact that the long axis of the intrusion is perpendicular to the regional foliation, support the hypothesis that the ultramafic intrusion is post-tectonic. Locally, the ultramafic rocks are cross-cut by irregular pegmatite injections. These pegmatites are present in several lithologies in the area, and most likely represent anatectic phases related to the regional metamorphism. We may therefore assume that the Qullinaaraaluk ultramafic intrusion is contemporaneous with the metamorphism. It was emplaced at a deeper level in the crust, and probably does not represent a hypabyssal intrusion. This aspect is particularly interesting in that it opens to exploration vast regions underlain by rocks formed at the same crustal level and that, up until now, had not been considered interesting from a metallogenic standpoint.

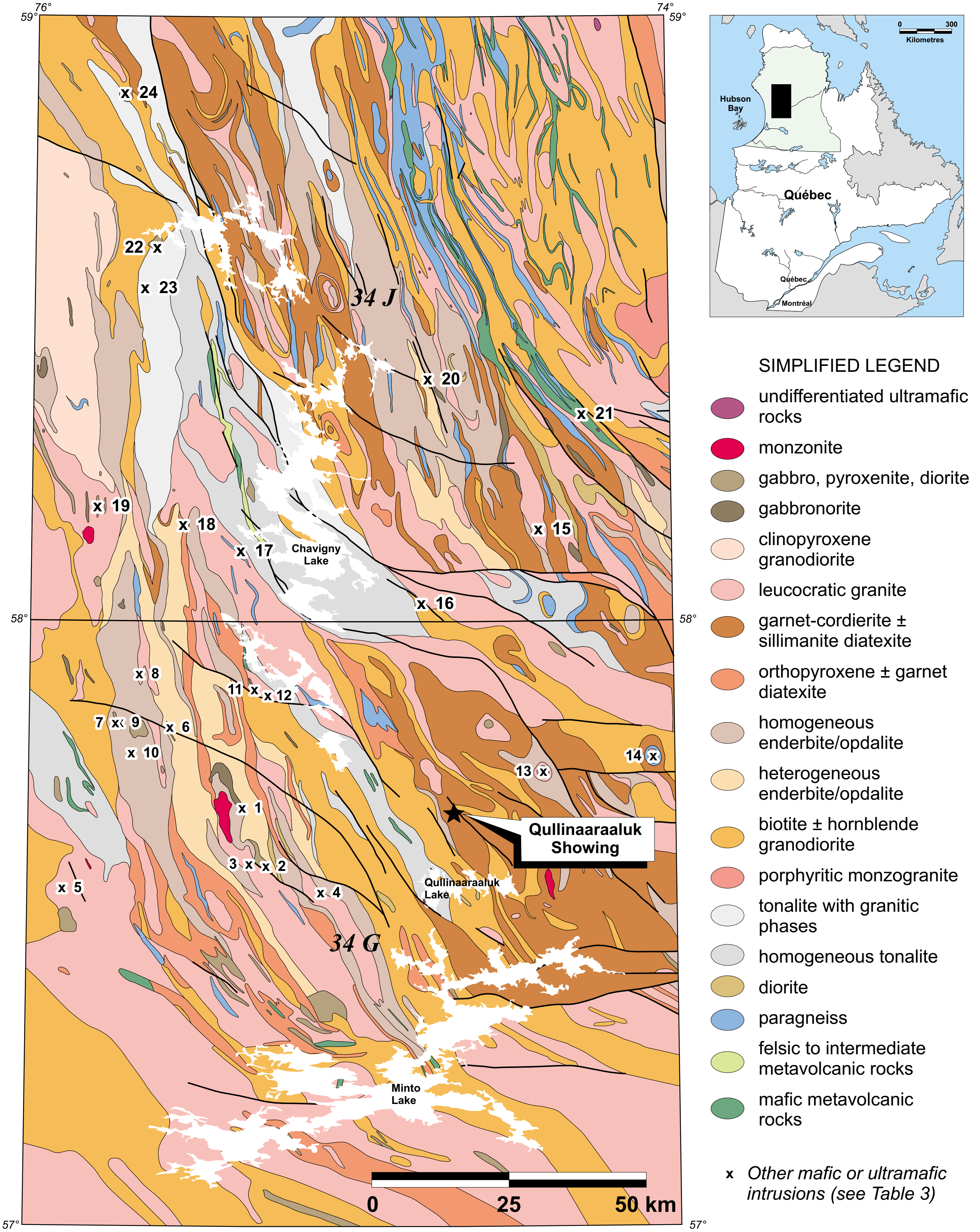

FIGURE 1 **-** Simplified geology of the Lac Vernon (Parent and Leclair, 2000) and Lac Minto (Leclair and Parent, 2000) areas. Location of the Qullinaaraaluk showing and occurrences of mafic and ultramafic intrusions.

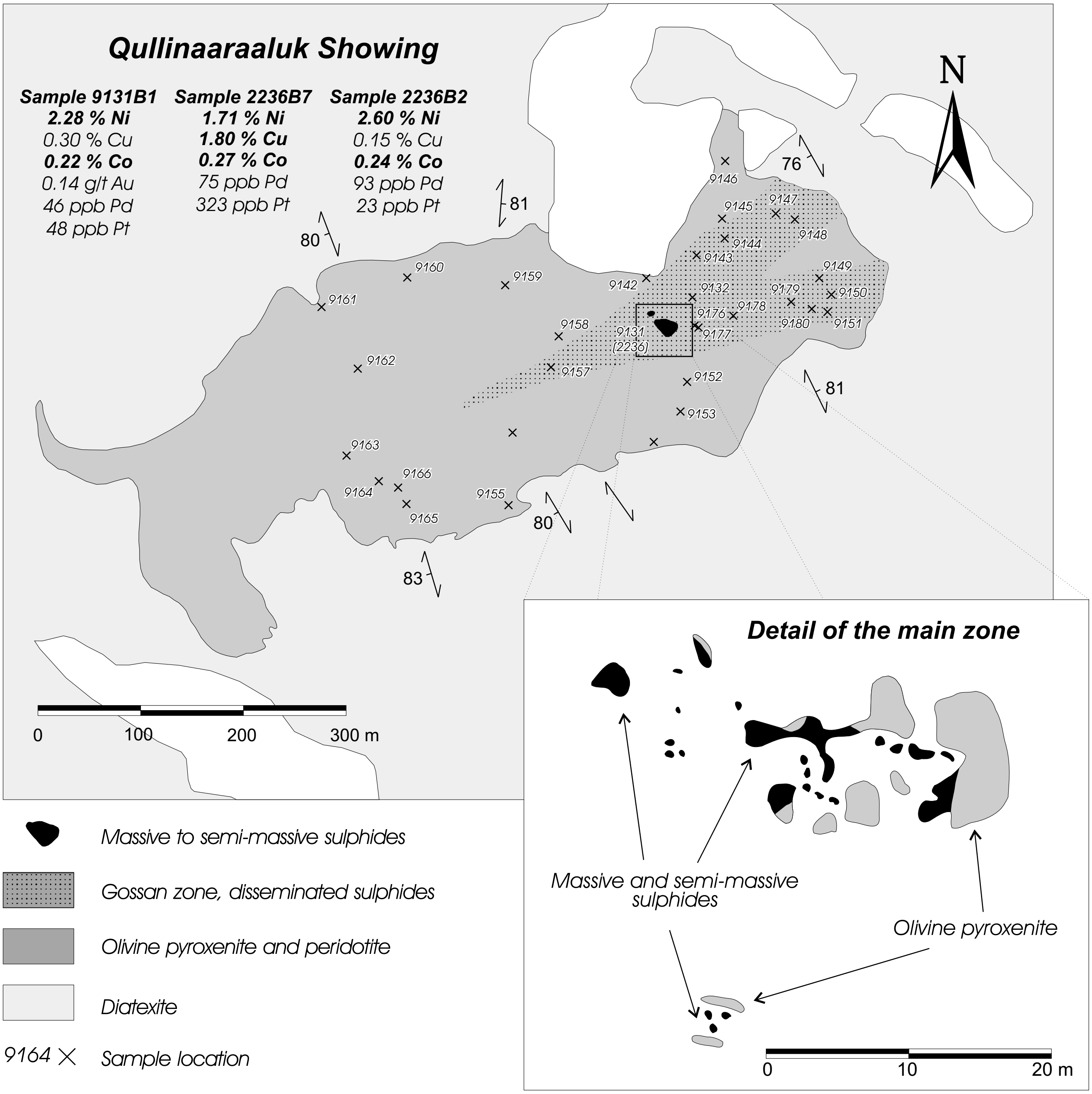

FIGURE 2 - Geology of the Qullinaaraaluk ultramafic intrusion and sample locations.

The Qullinaaraaluk intrusion mainly consists of olivine pyroxenite with a few peridotite horizons. The olivine pyroxenite is homogeneous, fine to medium-grained and has a bluish grey colour. The dominant mineral components are pyroxenes (mainly clinopyroxene) and olivine (< 40 %) with traces (< 10 %) of plagioclase, biotite and hornblende. In thin section, clinopyroxene and orthopyroxene occur as 1 to 2-millimetre hypidiomorphic grains containing minute inclusions along cleavage planes. Olivine grains are fairly fresh, unaltered but sometimes fractured. They are generally sub-rounded and smaller than pyroxene grains. The interstitial phase (or matrix) is essentially composed of light green (in natural light) clinopyroxene. Rare plagioclase grains, where present, are delicately twinned and fill the interstices between pyroxene and olivine grains. The peridotite is similar to the pyroxenite, but with a higher olivine content (> 40 %). In thin section, the peridotite is formed of rounded olivine grains, slightly fractured but not serpentinized, floating in a matrix of light green pyroxene.

An important feature of these ultramafic rocks is the absence of serpentinized olivines, which is fairly rare for Archean rocks. Olivine grains observed in thin section are very fresh. Since the serpentinization of olivine results in the release of magnetite, most Archean ultramafic rocks exhibit a high magnetic susceptibility, and are therefore easily identified in the field with a magnet. The absence of serpentinization, and therefore of magnetite, in Qullinaaraaluk rocks gives these rocks a lower magnetic susceptibility than most other ultramafic rocks in the Far North region. This is why they were originally described as melagabbros.

Table 1 lists the geochemical composition of seven (7) samples, with little or no mineralization, taken in the vicinity of the Qullinaaraaluk showing. Sample locations appear in Figure 2. Analyzed samples display similar compositions, and are characterized by low SiO_2 contents (between 50 and 53 %) and Al_2O_3 contents (between 2.4 and 4.9 %), and high MgO contents (between 18 and 25 % except for one sample at 15 %). The loss on ignition (LOI) is abnormally low for ultramafic rocks, which may however be explained by the absence of serpentinization which would have increased the amount of volatile phases. In comparison, ultramafic rocks from the Venus belt, in the Lac Gayot area (Gosselin and Simard, 2000), yielded values of 8 to 13 % loss on ignition. These rocks are metamorphosed to the amphibolite facies and are serpentinized.

The Qullinaaraaluk intrusion appears to be similar to the mafic to ultramafic Lac Rocher intrusion, located near

TABLE 1 - Analytical results for major elements and certain trace elements in samples from the Qullinaaraaluk showing area.

	site	9142	9145 A	9146	9150	9152	9153	9155
lithology		olivine pyroxenite	olivine pyroxenite	olivine pyroxenite	peridotite	olivine pyroxenite	olivine pyroxenite	olivine pyroxenite
element	unit							
SiO_2	%	52.5	52.30	50.40	52.00	50.70	51.40	53.00
Al_2O_3	%	4.84	2.42	3.80	3.26	4.77	4.02	4.49
Fe_2O_3	%	9.73	11.10	9.73	11.80	11.90	10.90	11.7
MgO	%	15.00	24.20	20.50	20.30	19.60	18.70	18.50
CaO	%	13.10	5.76	8.95	10.30	9.72	12.50	8.77
Na_2O	%	0.83	0.34	0.38	0.50	0.67	0.59	0.74
K_2O	%	0.60	0.13	0.23	0.11	0.15	0.16	0.17
TiO_2	%	0.34	0.18	0.27	0.26	0.33	0.31	0.23
MnO	%	0.18	0.20	0.16	0.20	0.20	0.19	0.20
P_2O_5	%	-	-	-	-	-	-	-
Cr_2O_3	%	0.04	0.46	0.49	0.18	0.26	0.22	0.11
LOI	%	2.95	2.91	4.25	1.00	0.70	0.76	1.43
Au	ppb	-	-	-	7	4	3	-
Co	ppm	66	89	76	90	94	74	97
Cu	ppm	93	112	n/a	145	n/a	68	249
Ni	ppm	-	370	510	250	500	210	340
Ni/Cu		-	3.30	n/a	1.72	n/a	3.09	1.37

-:Below detection limit; n/a: Results pending; LOI: Loss on ignition.

the Frotet-Evans belt, in the James Bay region. The latter consists of a late tectonic intrusion about 1,000 metres by 600 metres in size, composed of pyroxenite and gabbro, hosted in gneissic tonalite and paragneiss (Bandyayera and Sharma, 2000). As in the Qullinaaraaluk area, the mafic and ultramafic rocks are not deformed and not serpentinized. The Lac Rocher intrusion hosts the showing bearing the same name, discovered in drillhole in the winter of 1999 by Nuinsco Resources Ltd. The announcement of the discovery, attributed to a drillhole that intersected a zone containing 10.8 % Ni over 3.2 metres (Bandyayera and Morin, 1999), triggered a staking rush in the area.

MINERALIZATION

The Qullinaaraaluk showing consists of a main massive sulphide zone (> 70 % sulphides) hosted in pyroxenite. Disseminated mineralization is observed in several locations in the intrusion, mainly in the NE portion and around the massive sulphide zone (Figure 2). Massive sulphides sporadically outcrop over a distance of about 25 metres and a width of 1 to 4 metres (see inset in Figure 2). No mechanical stripping was done on the showing; the shape of the sulphide zone has yet to be determined. A second thinner zone (about 1 metre) was observed about 15 metres south of the main zone. For now, it is impossible to determine the size of this zone or if it is related to the main zone. It currently consists of a few rounded outcrops that were not sampled for chemical analyses. No channel sampling was performed on the Qullinaaraaluk showing. All samples were collected with a sledgehammer.

In the massive sulphide zone, pyrrhotite is the dominant sulphide phase; it sometimes forms cm-scale grains. The other sulphide phases are, in decreasing order: bravoite, pyrite, chalcopyrite and pentlandite. Bravoite is an alteration mineral, formed by the supergene alteration of pentlandite; it is more frequently observed in massive zones than in disseminated facies. Bravoite forms between 5 and 10 % of the sulphide phase; it occurs as small grains or small pods associated with pyrrhotite. Chalcopyrite either occurs in association with bravoite or is distributed along a network of thin fractures in silicate phases. Pentlandite forms very delicate flame textures and small pods within the pyrrhotite. A few chromite grains were also observed locally.

Analytical results from samples taken in the main zone are listed in Table 2 (series 2236 and 9131). The nickel content of massive sulphide samples varies from 1.71 to 2.60 %, whereas the cobalt content varies from 0.14 to 0.27 %. The copper content is low, except for one chalcopyrite-rich sample which yielded 1.80 % Cu. Platinum group element values are rather disappointing, the highest being 0.32 g/t Pt in the copper-rich sample. Ni/Cu ratios are abnormally high (up to 24), which suggests some copper remobilization may have occurred. It is not impossible that the PGEs may also have been remobilized, and that Cu and PGE-enriched zones are present elsewhere.

An impressive disseminated sulphide zone is present in the NE part of the ultramafic intrusion (Figure 2). The rock is generally rusty, and the sulphide content varies from 2-3 % to about 20 % in certain areas. Sulphide phases observed in the disseminated zone are the same as in the massive sulphide zone, i.e. dominantly pyrrhotite with minor pyrite and traces of chalcopyrite and pentlandite. These sulphides are generally associated with the interstitial silicate phase, and occur as mm-scale grains or small droplet-shaped pods.

Metal grades of samples from the disseminated sulphide zone are listed in Table 2. Certain samples yield interesting grades on the order of 0.25 % Ni, and up to 0.49 % in one case. Ni/Cu ratios for disseminated mineralization are not as high as for massive sulphides. As a general rule, there is a fairly consistent correlation between the nickel content and the sulphur content in disseminated sulphide samples (Figure 3a). The nickel content is proportional to the sulphur content, and there is no evidence to suggest that nickel was affected by a secondary enrichment process. During metamorphism of ultramafic rocks, and more specifically serpentinization, nickel is preferentially incorporated into sulphides phases at the expense of silicate phases (olivine) (Barnes and Hill, 2000), such that a substantial nickel enrichment may take place. This process is particularly effective in disseminated sulphide-bearing rocks, where the silicate-sulphide exchange is facilitated. Since the ultramafic rocks of the Qullinaaraaluk intrusion were probably not subjected to substantial metamorphism, disseminated sulphide horizons did not profit from this enrichment process.

Table 2 also lists Ni, Cu and Co values recalculated to 100% sulphides, based on the method proposed by Naldrett (1981). This method uses pentlandite, chalcopyrite and pyrrhotite as sulphide phases. Due to the presence of pyrite and bravoite in Qullinaaraaluk rocks, the method used is not rigorously accurate for this type of paragenesis, since the stoichiometry is slightly off-balance. Nevertheless, we added this data as an indication. Furthermore, no corrections were made to account for the nickel content of silicate phases.

OTHER MAFIC TO ULTRAMAFIC INTRUSIONS IN THE MAP AREA

Several of the outcrops we visited during our mapping survey of the Lac Vernon and Lac Minto areas consisted of lithologies which could be related to rocks of the

TABLE 2 - Analytical results, Ni/Cu ratios and metal concentrations recalculated to 100 % sulphides for mineralized samples of the Qullinaaraaluk showing. Concentrations are either in percent, or in the unit indicated above each column.

Sample	Sulphides	Ni ppm	Cu ppm	Co ppm	Au ppb	Pd ppb	Pt ppb	S %	Ni/Cu	Ni* %	Cu* %	Co* %
2236A1	d (5-10%)	509	216	70	n/a	6	6	n/a	2.36	n/a	n/a	n/a
2236B1	m (>95%)	**2.00%**	**0.42%**	**0.22%**	n/a	80	**128**	n/a	4.76	n/a	n/a	n/a
2236B2	m (>90%)	**2.60%**	**0.15%**	**0.24%**	n/a	93	23	n/a	17.33	n/a	n/a	n/a
2236B3	m (>70%)	**1.98%**	816	**0.14%**	n/a	70	13	n/a	24.26	n/a	n/a	n/a
2236B4	m (>90%)	**2.33%**	**0.18%**	**0.18%**	n/a	82	81	n/a	12.94	n/a	n/a	n/a
2236B5	m (>90%)	**2.19%**	**0.16%**	**0.16%**	n/a	76	26	n/a	13.69	n/a	n/a	n/a
2236B6	m (>90%)	**2.15%**	**0.17%**	**0.18%**	n/a	54	26	n/a	12.65	n/a	n/a	n/a
2236B7	m (>90%)	**1.71%**	**1.80%**	**0.27%**	n/a	75	**323**	n/a	0.95	n/a	n/a	n/a
9131B1	m (>80%)	**2.28%**	**0.30%**	**0.22%**	140	46	48	28.40	7.60	3.09	0.41	0.30
9131B2	m (>85%)	**2.28%**	**0.14%**	**0.20%**	7	82	26	31.40	16.29	2.80	0.17	0.25
9132	d (15-20%)	**0.49%**	**0.13%**	320	18	22	9	6.21	3.77	3.03	0.80	0.20
9143A1	d (1-3%)	949	564	104	9	7	-	1.00	1.68	3.62	2.15	0.40
9143A2	d (3-5%)	590	264	59	-	-	-	0.42	2.23	5.31	2.38	0.53
9144A1	d (10-15%)	**0.27%**	**0,14%**	144	12	14	18	2.42	1.93	4.24	2.20	0.23
9147	d (10-15%)	**0.22%**	**0.12%**	137	15	7	7	2.20	1.83	3.81	2.08	0.24
9148	d (1-3%)	527	362	75	12	-	-	0.61	1.46	3.30	2.27	0.47
9149	d (10-15%)	**0.28%**	**0,14%**	137	17	6	-	1.94	2.00	5.45	2.72	0.27
9151	d (10%)	**0.27%**	**0.20%**	156	7	-	-	2.61	1.35	3.93	2.91	0.23
9157	d (3-5%)	459	190	82	-	-	-	0.65	2.42	2.71	1.12	0.48
9158	d (3-5%)	221	107	65	-	-	-	0.33	2.07	2.57	1.25	0.76
9159	d (1-3%)	237	64	62	-	-	-	0.23	3.70	3.94	1.06	1.03
9160	d (3-5%)	356	228	63	-	-	-	0.56	1.56	2.44	1.56	0.43
9161	d (10%)	**0.21%**	**0.11%**	123	10	6	-	1.50	1.91	5.29	2.77	0.31
9162	d (1-3%)	184	56	62	-	-	-	0.19	3.29	3.70	1.13	1.25
9163	d (3-5%)	551	953	68	11	7	-	0.45	0.58	4.56	7.89	0.56
9164	d (3-5%)	701	272	101	-	-	-	1.04	2.58	2.59	1.01	0.37
9165	d (3-5%)	257	82	64	-	-	-	0.28	3.13	3.51	1.12	0.87
9176	d (1-3%)	669	459	80	6	-	-	0.64	1.46	3.97	2.73	0.48
9177	d (3-5%)	758	277	76	9	-	-	0.51	2.74	5.62	2.05	0.56
9178	d (10-15%)	**0.11%**	535	96	6	-	-	1.11	2.06	3.78	1.84	0.33
9179	d (1-3%)	364	108	53	-	-	-	0.22	3.37	6.24	1.85	0.91
9180	d (1-3%)	214	104	63	5	-	-	0.28	2.06	2.93	1.42	0.86

m = massive sulphides, d = disseminated sulphides, - Below detection limit, n/a not analysed

Ni*, Cu*, Co* - elements recalculated to 100 % sulphides according to the method proposed by Naldrett (1981).

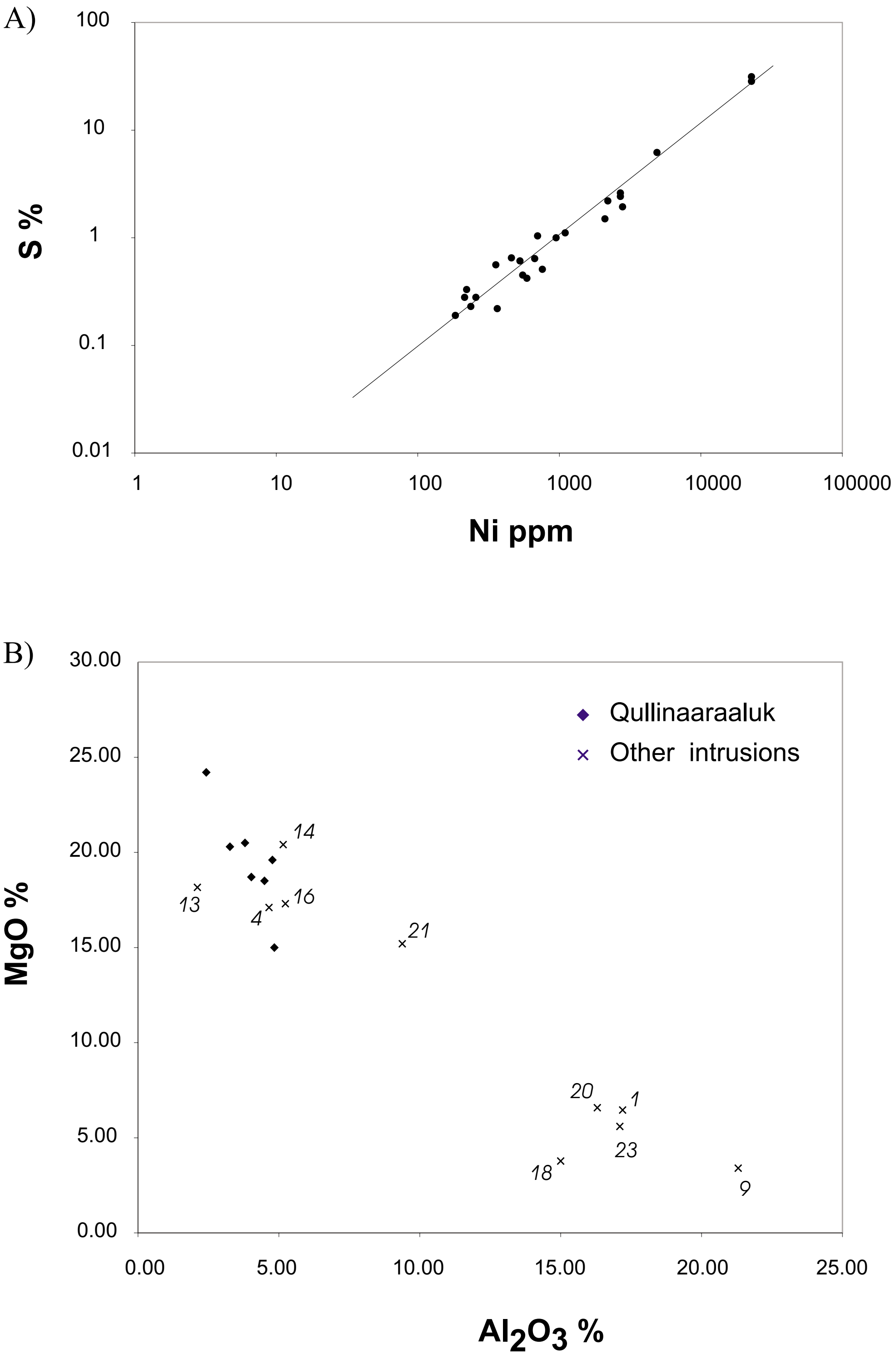

FIGURE 3 - Geochemical diagrams : ***a)*** Nickel variation relative to sulphur content for mineralized samples from the Qullinaaraaluk intrusion. ***b)*** Aluminium variation as a function of magnesium for unmineralized samples from Qullinaaraaluk, and various samples from mafic and ultramafic intrusions occurring within the study area.

Qullinaaraaluk intrusion. We tried to inventory mafic or ultramafic intrusions from samples collected during the mapping survey. Samples of mafic or ultramafic intrusive rock, collected from the dominant lithology on an outcrop, are compiled in Table 3 and their location is shown in Figure 1. To date, samples from 24 locations were taken into consideration. For each site, Table 3 lists the UTM (NAD 83) coordinates, the observed lithology, the degree of deformation, and where relevant, a particular feature of the sample. It is worth mentioning that not all the mafic or ultramafic intrusions that were mapped during the summer of 2000 are listed in this table; only those which had been sampled were taken into consideration. Whenever possible, a whole rock analysis of the sample was performed. Analytical results are shown in Table 4.

Two principal features characterize the rocks of the Qullinaaraaluk intrusion: the absence of deformation and the absence of metamorphism. An intrusion related to the Qullinaaraaluk intrusion should therefore possess similar qualities. An ultramafic composition (pyroxenite or peridotite) is more favourable for Ni-Cu-Co mineralization than a mafic composition (gabbro or even diorite). We nevertheless included mafic intrusions since they may represent facies of a differentiated suite including more promising ultramafic horizons.

Several samples presented in Table 3 are weakly deformed or undeformed, and appear only weakly metamorphosed. However, six of these samples stand out due to their similarity with rocks of the Qullinaaraaluk intrusion. Sites 1 and 10 contain olivine gabbronorites that are very similar in thin section to Qullinaaraaluk rocks with regards to the absence of serpentinization of olivine grains. Sites 4, 13, 14 and 16 contain rocks mapped as pyroxenites or gabbros, but with major element concentrations very similar to those of Qullinaaraaluk rocks. Figure 3b is a binary diagram showing the Al_2O_3 content as a function of MgO for rocks of the Qullinaaraaluk intrusion along with other mafic or ultramafic intrusions in the area. Samples from sites 4, 13, 14 and 16 have Al_2O_3 and MgO contents similar to those of ultramafic samples from the Qullinaaraaluk intrusion. Samples from the remaining sites are markedly different. The sample from site 1, similar to Qullinaaraaluk rocks in thin section, is chemically distinct.

We believe that rocks from sites 1, 4, 10, 13, 14 and 16 are the most likely to be genetically linked to rocks of the Qullinaaraaluk intrusion, and therefore of representing environments favourable to the formation of Ni-Cu-Co mineralization.

CONCLUSION

The discovery of the Qullinaaraaluk showing in an ultramafic intrusion within high-grade metamorphic terrains opens up new horizons for mineral exploration in the Archean environment of Québec's Far North. Exploration for metallic ore deposits, which was largely if not exclusively centred on greenstone belts, will now expand into unconventional areas underlain by metamorphic granitoid rocks. The Qullinaaraaluk showing therefore represents a new exploration potential for the Far North region; it warrants further attention in order to be fully assessed and its setting fully understood.

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TABLE 3 **-** Location and characteristics of samples from mafic or ultramafic intrusions. Sample locations are shown in Figure 1.

Site	sample	sheet	UTM zone	easting	northing	lithology	analysis	thin section	deformation	note
1	1155A	34G11	18	479834	6394432	gabbronorite	X	X	very weak	contains olivine, similiar to the Qullinaaraaluk rocks
2	2136A	34G11	18	484434	6383448	gabbronorite		X	yes	does not contain olivine
3	2138	34G11	18	481068	6383780	diorite		X	yes	seems recrystallized
4	4193A	34G11	18	494246	6378545	gabbro	X	pending	no	
5	5108A	34G12	18	446683	6379556	gabbro		X	very weak	traces of olivine
6	1044A	34G13	18	466429	6409066	diorite		X	no	
7	1065	34G13	18	456746	6409867	gabbro		X	weak	sericitization, amphibolitization
8	4015B	34G13	18	460941	6418997	gabbro		X	very weak	recrystallized
9	1064	34G13	18	457313	6410142	monzodiorite	X	pending	yes	
10	1292A	34G13	18	459527	6404333	gabbronorite		X	no	contains olivine, similar to the Qullinaaraaluk rocks
11	4030A	34G14	18	482146	6415939	gabbronorite		X	yes	
12	4032A	34G14	18	484484	6415184	diorite		X	very weak	
13	9174	34G15	18	524923	6409980	orthopyroxenite	X	X	no	does not contain olivine
14	9175A1	34G16	18	555529	6404517	pyroxenite	X	X	no	metamorphic amphiboles, does not contain olivine
15	2066	34J01	18	534362	6445652	pyroxenite		X	no	traces of olivine
16	3109	34J02	18	512780	6431861	pyroxenite	X	pending	very weak	
17	130A	34J03	18	479568	6441620	peridotite		X	oui	serpentinization
18	1231	34J04	18	468956	6446417	gabbronorite		X	very weak	contains olivine
19	3093	34J04	18	453208	6449941	gabbro	X	pending	yes	
20	3183A	34J07	18	513987	6473238	monzodiorite	X	pending	yes	
21	5134	34J08	18	542265	6466983	pyroxenite	X	pending	yes	
22	1150	34J12	18	464035	6497575	gabbro		X	weak	sericitization, amphibolitization
23	3160	34J12	18	461964	6490087	gabbro	X	pending	no	
24	1049A	34J13	18	457934	6525513	gabbro		X	weak	recrystallized plagioclase and quartz, does not contain olivine

Note: UTM coordinates are in NAD83

TABLE 4 - Analytical results for major elements from a few samples taken from mafic to ultramafic intrusions. Sample locations are shown in Figure 1, and sample descriptions are listed in Table 3.

site		1	4	9	13	14	16	18	20	21	23
outcrop		1155A	4193A	1064	9174	9175A1	3109	3093A	3183A	5134	3160
NTS		34G11	34G11	34G13	34G15	34G16	34J02	34J04	34J07	34J08	34J12
SiO_2	%	45.70	52.00	46.20	55.50	51.30	49.40	52.80	50.20	48.30	49.90
Al_2O_3	%	17.20	4.65	21.30	5.15	2.12	5.23	15.00	16.30	9.38	17.10
Fe_2O_3	%	13.50	12.00	10.20	14.50	11.50	10.60	11.60	10.30	14.90	12.30
MgO	%	6.46	17.10	3.40	20.40	18.20	17.30	3.78	6.58	15.20	5.60
CaO	%	9.32	11.90	10.70	1.82	14.60	14.50	7.22	8.30	7.87	9.94
Na_2O	%	2.58	1.05	3.54	0.87	0.49	0.74	3.63	4.04	0.95	2.59
K_2O	%	0.65	0.40	0.66	0.56	0.09	0.25	1.22	1.30	1.15	0.56
TiO_2	%	1.06	0.36	1.08	0.27	0.24	0.40	2.29	1.03	0.56	0.90
MnO	%	0.15	0.22	0.10	0.21	0.22	0.18	0.16	0.14	0.30	0.12
P_2O_5	%	0.14	0.01	0.71	0.04	0.01	0.01	0.33	0.48	0.02	0.03
Cr_2O_3	%	0.01	0.14	0.01	0.24	0.05	0.29	0.01	0.03	0.13	0.01
PAF	%	3.02	0.32	1.94	0.16	0.78	1.09	1.68	0.99	1.50	0.85
Au	ppb	5	4	5	8	-	4	4	3	6	-
Co	ppm	43	56	18	94	84	57	35	30	60	43
Cu	ppm	55	73	4	163	160	141	18	50	30	68
Ni	ppm	33	91	3	430	180	276	27	60	177	64
Ni/Cu		0.60	1.25	0.75	2.64	1.13	1.96	1.50	1.20	5.90	0.94

- Below detection limit; LOI: Loss on ignition

▨ Compositionally similar to Qullinaaraaluk rocks

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Director
Alain Simard

Head of the Service géologique de Québec
Pierre Verpaelst

Supervision of promotional documents
Alain Simard

Edition
Jean-Pierre Lalonde

Computer assisted drawing
Nathalie Drolet

Translation into English
Michèle Mainville

Technical supervision
André Beaulé

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