GM 41184

RECONNAISSANCE GEOLOGICAL MAPPING, NORTHWESTERN SECTION, MAIN BLOCK, PLACER/ELDOR JOINT VENTURE

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Reconnissance Geological Mapping
Northwestern Section, Main Block
Placer/Eldor Joint Venture
Eastmain, Quebec

V116
by
Placer Development Limited

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Table of Contents

INTRODUCTION

The Eastmain property is located 320 km northeast of Chibougamau, Quebec, (latitude 52 18 N and longitude 72 5 E). The map area is located in townships 2333, 2334, 2433 and 2434 in the territory of Mistassini.

The purpose of the field work completed was to map the western and north western portion of the Main Block claim group up to the Other lands claim group, (fig. 1) and to ground check results of the airborne electromagnetic survey completed in March 1983.

Placer Development Ltd. holds the claim group which follows the intrusive granite/unit 1M (cycle 1 mafic volcanic) contact. Adjoining claims to the west are held by a prospector Mr. E. Bazinet.

Previous work in the area, for which data was available, was completed by the following:

Canex Aerial Exploration Ltd. R. Shklanka and B. van Zoost 1969-1970, geological mapping, airborne electromagnetic surveys.

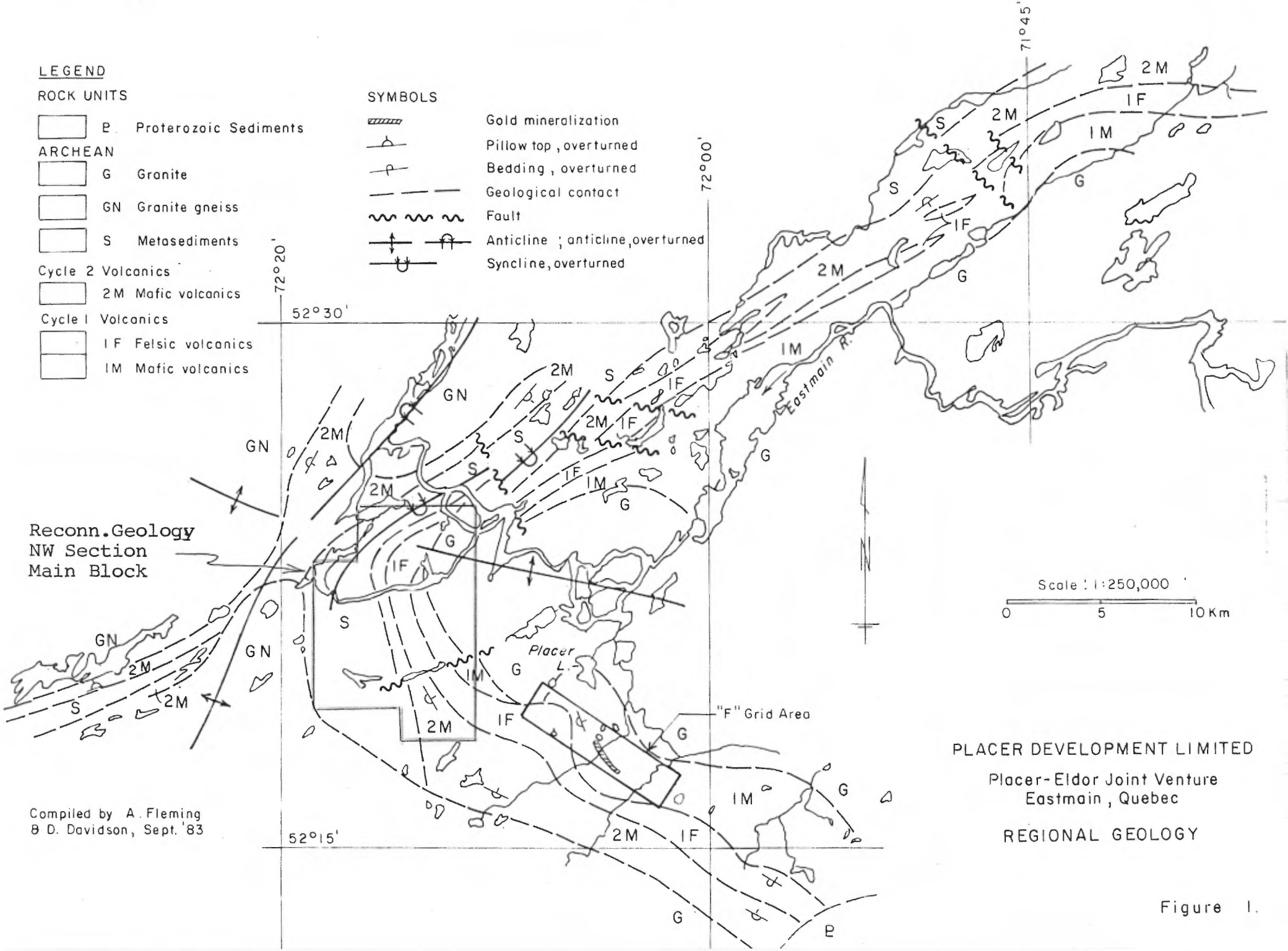
Placer Development Ltd. R. Pinsent, M. Gareau 1982 reconnaissance regional geological mapping.

Placer Development Ltd. M. Drouin, H. Thiboutot 1982-83 geological mapping , Main Block claim group.

Geological mapping was undertaken by the writer, with assistance from H. Thiboutot, between June 29 and July 10, 1983. Field data was plotted on 1:31680 scale aerial photographs and plotted onto 1:15000 scale photo-mosaic enlargements for final presentation. Because there is less than 1% outcrop on the Placer claims in this area mapping was also completed outside of these claims in order to better understand the geology.

REGIONAL GEOLOGY

The regional geology consists of metavolcanics which are overturned and refolded. (fig 1, Davidson et al) The basal sequence consists of mafic volcanics, (unit 1M) which in turn are overlain by felsic volcanics (1F), which are then overlain by more mafic volcanics (2M). The volcanic sequence is then in turn overlain by metasediments.



PLACER DEVELOPMENT LIMITED

Placer-Eldor Joint Venture
Eastmain, Quebec

REGIONAL GEOLOGY

Figure 1.

The mafic volcanics are predominantly basalts (1M,2M) while the felsic volcanics (1F) are rhyolitic tuffs, flows and volcanoclatics. The metasediments consist of argillaceous arenite and a basal conglomerate. A granite gneiss and an intrusive granite truncate this sequnce to the southwest. The intrusive granite appears to be post metamorphism.

Two phases of folding have been observed which repeats the sequence. Faulting appears to have offset the volcanic sequence and in part the granite contact, but faulting cannot be quantified because of poor outcrop.

LITHOLOGY

MAFIC VOLCANICS

BASALTS(V7)

There are two cycles of mafic volcanic defined. Unit 1M contains the A-B zone gold mineralization, Unit 2M contains electromagnetic anomalies which have good continuity and strike length. In the map area the Unit 1M mafic volcanics are truncated by the granite. Unit 2M mafic volcanics lie structurally below but stratigraphically above 1M volcanics, which are truncated to the south by the granite gneiss.

The metabasalts consist of metamorphosed flows, predominately massive with only minor pillowed sections. The massive flows have a wide variation in grain size from very fine to coarse. The pillowed sections are mosltly sheared with only one outcrop location where tops could be determined, 320/50 deg. tops to west. The metabasalts contain an Fe,Al garnet, possibly Almandine. The garnet is more abundant in the massive metabasalts than in the pillowed variety. The metabasalts contain secondary biotite and chlorite which are metamorphic products. The mineralisation in the metabasalts consist of pyrite and pyrrhotite in trace amounts. Some outcrop localities have minor quartz veining,but there are no good examples of grid alteration.

FELSIC VOLCANICS

RHYOLITE (V2)

The rhyolite flows are very fine grained, dark pink in colour, hard, with no mafics and have conformable contacts with basalt flows. Flow banding was not observed at any of the few outcrop exposures.These rhyolite flows are similar to those found to the south on grid A and although not very thick (5-10 metres) appear to be very continuous in strike length.

RHYOLITE TUFFS AND VOLCANOCLASTICS (V1,VCSX)

The rhyolitic tuffs and volcanoclastics (Unit 1F) are stratigraphically located between Units 1M and 2M mafic volcanics. This unit includes both fine and coarse grained tuffs and agglomerates (fragmentals) as well as volcanoclastic (arenites, conglomerates) rocks of a similar composition.

In general these rocks are white to light pink with 1-5 mm quartz eyes, 3-20 mm garnets and have a 2-4 mm thick weathering rim. The grain size varies from fine to agglomeritic. The agglomerate or fragmental contains fragments from 1 cm to 5 cm in length with 80% of the fragments of rhyolitic composition and 20% with a more mafic compostion.

IRON FORMATION (F1,F2)

Sulphide iron formation occurs as discreet beds between basalt flows. These sulphide iron formations (15-20% sulphides) are very finely bedded chert with sulphides (pyrite and pyrrhotite). The sulphide bands are highly contorted similar to soft-sediment slumping textures. The recrystallized chert has a sugary texture and most of the pyrite has been metamorphosed to pyrrhotite.

There is one outcrop of recessively weathered rock which appears to be carbonate iron formation because of the distinctive carbonate weathering. The rock is also very fine grained with poorly defined beds. This sample also gives off SO when tested with 10% HCl which may indicate the presence of zinc.

METASEDIMENTS (S1,S2)

The metasediments can be divided into two lithologies a conglomerate and a finer grained argillaceous arenite. The rocks weather positively and there is abundant outcrop. The metasediments are located on the western and north western portion of the map area. The thickness of this unit is probably structurally controlled and it is felt that the axis of an over-turned syncline runs through the middle of this unit, but due to the high degree of metamorphism in this area the precise location of this axis was not found.

Argillaceous Arenite(S2)

The argillaceous arenite, actually biotite-muscovite-quartz schist, is medium grained with strongly developed silica ribs which give this rock a bedded appearance. The rock contains up to 5 % pyrite and 2-5 % magnetite at some localities. The meta-morphic minerals include 5-10% garnets (2-5 cm), 1-5 % kyanite blades (1-4 mm) and possibly andalusite or cordierite.

Conglomerate (S1)

The conglomerate is actually a biotite-muscovite-quartz schist with 30-40 % pegmatite patches. These pegmatite patches have very sharp, smooth and well rounded contacts, in a more mafic, schistose matrix. These patches probably represent recrystallized granitic clasts. The conglomerate is matrix supported with clasts of both granitic and mafic compostion. The clast ranges from 10 cm up to 1 m but these clasts have been deformed and a true grain size is difficult to determine. The conglomerate also contains 2-5% garnets.

GRANITE

The late stage granite intrusion is located on the east side of the map area with the mafic and felsic volcanics wrapped around it. The granite weathers recessively so there is little outcrop.

The granite is coarse grained (2-5 mm) granoblastic textured with no foliation. The granite is potassium rich, 30% K-feldspar, which gives the granite a bright pink colour. The mafics consist of 10-15 % biotite with minor muscovite. The contact with the mafic and felsic volcanics is irregular and the contact phase contains xenoliths of mafic material.

GRANITE GNEISS

The granite gneiss is located on the western side of the map area and appears to truncate the metasediments to the west and south. This formation may be the basement rock upon which the seqence has been deposited. Granitic in compostion it has a strong northeast striking foliation,contains 15-25 % biotite /hornblende and minor pegmatitic sections. This granitoid does not appear to be related to the younger intrusive granite.

STRUCTURE

The structure of the area is complex and there have been at least two periods of folding. In the first stage the sequence has been folded to form an overturned syncline and then refolded to form a large antiform (fig 1)

Stage 1 folding appears to have structurally thickened the meta-sediments. The fold axis was not located on the ground in map area because of the lack of outcrop and the high degree of the metamorphism to the southwest.

Faulting in the map area shows left lateral movement and offsets the geology as well as the airborne magnetic and E.M. conductors. There are also a number of different lineations which can be observed on aerial photographs and Landsat images.

METAMORPHISM

The regional metamorphism is upper greenschist facies with the metamorphic minerals being garnet, biotite, kyanite, and andalusite or cordierite. The volcanics and the sediments have been recrystallized to schists. There appears to be an increase in metamorphic grade from east to west as there is a greater degree of recrystallization of the granitic clasts in the conglomerate and a greater abundance of metamorphic minerals.

AIRBORNE GEOPYSICS

An airborne magnetic and electromagnetic survey was flown by AERODAT LIMITED during March 1983 over the Eastmain claim area. For an explanation of the method, and flight line data refer to the Aerodat report on COMBINED HELICOPTER-BORNE MAGNETIC AND ELECTROMAGNETIC SURVEY, EASTMAIN RIVER AREA, QUEBEC.

AIRBORNE E.M.

The airborne E.M. conductor map shows that almost all the electromagnetic anomalies are of a continuous nature and stratabound. The E.M. anomalies are also localized in two lithologic units, namely Unit 2M mafic volcanics and the metasediments. The nature of these conductors is very similar to those found on the southern portion of the Main Block,ie. Grids A,B,C,D,E and H.

The E.M. conductors can be divided into three groups with two groups located in the Unit 2M and one group in the metasediment. The anomalies with the best inphase/quadrature ratios are located in Unit 2M just south of Andrew Lake.

The E.M. anomalies strike from south of GRID A to north of the Eastmain River. There are also coincident magentic anomalies with some of the E.M. anomalies.

The lack of outcrop hindered the ground explanation of all the conductors, but in areas of outcrop the conductors are caused by magnetic sulphide iron formation (pyrite,pyrrhotite).

AIRBORNE MAGNETICS

The airborne magnetics can be used to define the geology in areas of no outcrop. The contact of the intrusive granite has a high magnetic response. The Unit 1F felsic volcanics correspond to a magnetic low. The mafic volcanics of both cycles also have a distinctive high magnetic response.

MINERALIZATION

The mineralization found on the map area consists of pyrite and pyrrhotite in sulphide iron formations. In general the iron formation contains 10-20% combined sulphides in 1 to 10 mm laminations within a recrystallized chert matrix. These occurrences were sampled with the best results sample #1803, 310 ppb Au and #1805 720 ppm Cu.

SAMPLE NO.	PPB AU	PPM AG	PPM CU	PPM ZN	COMMENTS
1801	80	LO.1	29		Sulphide iron formation in basalt, 10-15% sulphides.
1802	L5	LO.1	3		Sulphide iron formation in basalts with a chert band.
1803	310	LO.1	13		Sulphide iron form. 10% sulphides
1804	2	0.2	L5		Argillaceous arenite
1805	20	LO.1	720		Sulphide iron formation in basalt. 10-15% sulphides
1806	10	1.0	15	30	Highly carbonated schist,with 1% py
1807	75	0.4	23		Basalt with 5% py

CONCLUSIONS AND RECOMMENDATIONS

The geology of the map area can be correlated with that of the southern portion of the Main Block. The thickness of the metasediments is controlled by folding. Faulting (left lateral displacement) has offset the geology. The 1M volcanics (which host the A-B zone gold deposit) are truncated by the granite and this unit does not contain any bedrock E.M. conductors. The best E.M. anomalies are located in Unit 2M volcanics and correspond to sulphide iron formations. The best grab sample from an iron formation assayed 300 ppb Au. This area is located within the ground held by Mr. E. Bazinet.

The E.M. anomalies located in Unit 2M volcanics, southern part of the Main Block, were tested concurrently with this mapping. Results of the drill testing indicate that the anomalies are caused by barren pyrite and pyrrhotite. Previous work by Placer Development, has failed to locate any gold mineralisation within the 2M volcanics.

It is recommended, however, that if there is regional exploration being carried on outside the Main Block, and if the ground south of Andrew Lake is open then it should be explored in greater detail. This area contains sulphide iron formation which assayed 300 ppb Au and contains the most interesting E.M. responses. The area should be explored using geophysics and geology to define drill targets.

Respectfully Submitted

Christopher G. Keech