



MINISTÈRE  
DE L'ÉNERGIE  
ET DES RESSOURCES

DIRECTION GÉNÉRALE DE  
L'EXPLORATION GÉOLOGIQUE  
ET MINÉRALE

PALMAROLLE AND POULARIES TOWNSHIPS

P.R. Eakins

Preliminary Geological Report

TOWNSHIPS OF PALMAROLLE AND POULARIES

County of Abitibi-West

by

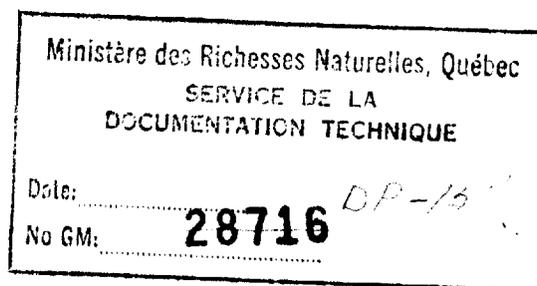
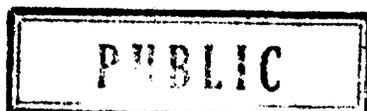
P.R. Eakins

The townships mapped during the 1972 field season comprise an area of 200 square miles located thirty-five (35) miles north of the regional centre of Rouyn-Noranda, and lying geologically immediately north of the Lyndhurst zone of copper mineralization. The area of the two townships is readily accessible from the paved Noranda-Macamic and Duparquet-La Sarre highways, and a well-developed system of range and lot roads.

The topography, for the most part, is flat to gently rolling with scattered, occasionally steep-sided hills; in the southeastern part of the area, however, prominent ridges underlain by granite rise several hundreds of feet above the surrounding countryside. A thick mantle of glacial lake clays covers most of the bedrock. Several broad, low, irregular, ridges of sand and gravel trend across the area.

Excepting for the eastern half of Poularies township, the area is under cultivation, supporting the villages of St. Germain-Boulé and St. Rose Poularies. Some of the best farms in the county are to be found around these villages. A small mobile home factory is located immediately east of St. Laurent Gallie<sup>han</sup>.

The mapping was carried out by a four man party using 1 inch equivalent 1000 foot aerial photographs. Interpretation of observations is much hampered in many sections by the paucity of outcrops and/or the complexity of lithotypes many of which are gradational one into the other.



### General Geology

The bedrock of the map area forms part of the Superior Province of the Precambrian Shield, and apart from some of the diabase dikes and possibly some other minor intrusive bodies, it is all probably of Archean age.

About two-thirds of the area is underlain by the Palmarde-Poularies granitic massif, a complex of bodies of granite, granodiorite, and quartz diorite of strong sodic affinities, with associated zones of migmatites and feldspathized amphibolites developed from basaltic and some rhyolitic lavas and tuffs. Several extensive zones of such mixed rocks occur well within the boundaries of the massif as a whole, but are difficult to outline on the map because of a poverty of outcrop.

White weathering, light grey to pink, medium grained granite with biotite and/or hornblende as the principle mafic mineral forms fairly well-defined bodies within the massif. These bodies are surrounded by zones of granodioritic and quartz dioritic rocks, intrusive breccias, basic migmatites, and amphibolites of salic to mafic composition showing feldspathization to varying degrees.

A band of rhyolitic lavas, breccias and tuffs trends diagonally across the southern two corners of the map-area, with most of the band along a strike length of twenty miles lying in the northern ranges of the adjoining townships of Duparquet and Destor. From work carried out in Roquemaure township adjoining on the east these rhyolitic volcanic rocks are the oldest members of the volcanic sequence so far identified in the general region. The Lyndhurst belt of copper mineralization occurs within this band of rhyolitic rocks in Range X of Destor township. Thin distinctive layers of grey chert are associated with these lavas and tuffs in southwestern Palmarde.

Basaltic lavas, some of which contain abnormally high contents of

magnesia and nickel revealing ultramafic tendencies, overlie the rhyolites in Roquemaure township and a similar relationship is seen in the southeastern corner of Poularies township and in adjoining Privat township still further to the east. These basalts usually occur as thin skinned pillowed masses with little associated volcanic breccia.

A prominent band of tuffs with associated basaltic and dacitic lavas trends southeasterly across the northeastern corner of the area. Rhyolitic lava appears in the southernmost part of this band and extends south to join with the southern rhyolite band apparently to form an anticlinal structure. A pronounced zone of mafic migmatites and gabbros occurs to the north and parallel with the main tuff band.

Serpentinized peridotite and dunite forms a very prominent ridge in the southeastern corner of Poularies township in or near in contact zone of the Palmar<sup>e</sup>le-Poularies granitic massif. The ridge must bear some of the best and most extensive outcrops of ultramafic rock in North-western Quebec, a surprizing occurrence for such a soft rock. Very thin chrysotile asbestos seams are to be found in many places along this ridge.

TABLE  
STRATIGRAPHIC COLUMN

PLEISTOCENE AND RECENT

Sand and gravels  
Post-glacial lake clays  
Sand and gravel, partly in prominent ridges  
Till, generally as a thin veneer

-----  
M A J O R   U N C O N F O R M I T Y  
-----

PRECAMBRIAN

LATE PRECAMBRIAN - Diabase dikes

-----  
F A U L T I N G  
-----

EARLY PRECAMBRIAN - Diabase dikes

Lamprophyre dikes  
Mafic, fine grained, dikes  
Salic, porphyrian dikes, probably of  
several ages  
Granites and related felsic and mafic  
migmatites

-----  
FOLDING AND FAULTING - SEVERAL PHASES  
-----

Felsic and mafic dikes and sills  
Gabbro  
Serpentinized Peridotite and Dolomite  
Felsic and mafic tuffs  
Rhyolitic lavas and breccias  
Basaltic lavas, mainly pillowed

### Volcanic Rocks

The rhyolitic lavas represent a continuation of the extensively-exposed rhyodacites as revealed by chemical analysis; see Roquemaure GR in press, QDNR of Roquemaure township. The typical rhyolite is a fawn to white weathering, very fine grained massive aggregate; some outcrops show well-developed flow structures, whereas others reveal excellent breccia, but on the whole clear-cut volcanic features are often not present or are obscured by deformation and/or metamorphism.

Locally dacitic and andesite lavas and breccias are found inter-layered with the rhyolites, as are thin layers of tuff. In southwestern Palmard<sup>e</sup> township thin (up to six inches), highly contorted, layers of cherty iron formation occur with the rhyolitic rocks.

Rusty-weathering, moderately to highly carbonatized schistose rhyolite outcrops in the southeastern corner of Poularies township, extending into the adjoining townships. One outcrop of this lava presents highly weathered rubbly, vegetation - infiltrated surfaces remarkably similar to weathered exposures in unglaciated terrains.

In eastern Poularies township the rhyolitic rocks are more highly deformed than elsewhere, and are generally strongly schistose. Two cleavages apparently of different ages are present in some exposures, and occasionally excellent cleavage mullions can be obtained of a sharp diamond-shaped cross section.

The basaltic lavas and their metamorphic derivatives are similar in all respects to those exposed in Roquemaure township in particular, and in the La Sarre region in general. Pillow structure is well-developed, and top determinations are readily obtainable in the less deformed sections. Pillow breccias do not appear to be developed with the pillowed accumulations to any great extent. For the most part these basalts are tholeiitic in composition; some true andesites may be present as well as more mafic, picritic varieties.

Tuffs are most prominently exposed as a band crossing the northeastern corner of Poularies township. Here they are generally finely well-layered, almost delicate alternations of very fine grained green and white material. The rocks of this band show considerable evidence of very intense deformation and much of the layering is probably transposed bedding; bedding that has tightly folded, stretched, and rotated. In many exposures of light coloured schists it is often very difficult to detect bedding, and the original nature of the rock is left in doubt.

### Intrusive Rocks

The serpentized peridotite of southeastern Poularies township is probably the oldest intrusive rock type. In general it outcrops as a grey to white weathering, fine to medium grained, soft aggregate of serpentine minerals locally veined by thin chrysotile asbestos stringers. This rock may be penecontemporaneous with, and genetically related to the nearby basaltic lavas.

Granitic rocks of the Palmar<sup>al</sup>de-Poularies massif are the most extensively exposed rocks of the map-area, and the most variable in composition, if the closely associated contact migmatites are included in the category.

The most distinctive lithotype is a pinkish to white weathering, medium grained, hypid<sup>i</sup>omorph<sup>i</sup>c granular massive aggregate of quartz, plagioclase feldspar and biotite and/or black amphibole. This granite is generally quite homogeneous with only occasional scattered xenoliths rich in black amphibole.

Granodiorites and quartz diorites of similar mineralogical composition, but showing great variations locally in mineralogy, and development of grain and foliation<sup>are</sup>, widespread around the granitic masses. Locally well-developed intrusive breccias with mafic fragments in a more

felsic matrix are a common feature. Some of the granodiorites contain rather striking blue quartz grains.

Associated with the granodiorites are a host of rock types which can be characterized as migmatites - feldspathized amphibolites derived from the volcanic country rock as well as to relatively homogeneous, massive, dioritic or gabbroic rocks. Some gabbroic masses within the ~~Palmarde~~<sup>cl</sup>-Poularies complex may be of complete magmatic origin, but conclusive evidence is scant in the field.

Very fine-grained, hard, grey feldspar porphyry dikes of distinctive appearance cutting the granitic rocks are prominent in the southeastern portion of the massif and are well-exposed in road cuts along the Macamic-Noranda highway. Thin salic and mafic dikes of various ages are commonly encountered throughout the map-area. Pegmatites are, on the otherhand, conspicuous by their absence.

Small quartz veins and stringers, often strongly deformed into quartz rods in schistose rocks, are present cutting all rock types except the diabase dikes and the peridotite.

#### Structural Geology and Metamorphism

A strong contrast generally exist between the structural patterns and metamorphism of the volcanic rocks to the north and south of the ~~Palmarde~~<sup>cl</sup>-Poularies granitic complex. The rocks to the south of the complex are in the green schist facies of metamorphism, and whereas at some places they are strongly foliated, in most outcrops primary structure such as pillows are well preserved. The northern volcanic rocks, on the other hand, have been intensely deformed with the disruption of primary structures and are in the epidote-amphibolite facies. This relationship is in keeping with that observed to the west in Roquemaure township.

Numerous good observations of pillow tops indicate that the Poularies-~~Palmarde~~<sup>cl</sup> granitic complex occupies the core zone of a major

anticlinal structure trending slightly south of east, and with steeply-dipping <sup>mb</sup> ~~lines~~.

Intense deformation has taken place along the northern flank of this anticlinal structure imparting a distinctive foliation to the rocks. Schistosity is more restricted in the rocks of the southern flank.

Faulting of various ages is evident throughout the area.

The <sup>ol</sup>Palmarde-Poularies complex appears to be in essence the roof zone of a granitic batholith pressing upwards locally as clear cut granite masses surrounded by migmatitic zones. Local structure trends within the complex are strongly at variance with regional trends. The granite bodies were probably emplaced by a combination of migmatitic and magmatic actions.

#### Economic Geology

The area has been extensively prospected over the years since about 1920, both for gold, base metal, and asbestos deposits. Only a few, apparently minor showings, except for one copper occurrence in southwestern <sup>ol</sup>Palmarde, have been reported to date. A number of geophysical anomalies of variety of types have been probed by diamond drilling in both townships. The poverty of outcrop and the extensive tracts of thick glacial lake clays make detailed prospecting ventures difficult, and often uncertain of result.

The large serpentized ultramafic body in southeastern Poularies contains numerous scattered chrysotile asbestos veinlets. It has been proved by a number of diamond drill holes.

Abundant sand and gravel for road building purposes is present within the area. Granite could be quarried as building stone at numerous places.