

# GEOLOGY OF THE LAKE AMBROSE SHEET WEST HALF (12A/10W)

B.F. Kean

## INTRODUCTION

During the 1976 field season mapping was completed for the Victoria Lake sheet (12A/6) started in 1975. Mapping was also started on the Lake Ambrose sheet (12A/10); the west half was completed and reconnaissance surveys were conducted in the east half. The sheet will be completed in 1976.

The area was previously mapped on a scale of 1:250,000 by the Geological Survey of Canada (Williams, 1970), and has been extensively explored for base metals by the American Smelting and Refining Company.

## GENERAL GEOLOGY

The map area is underlain predominantly by the Middle Ordovician (?) Exploits Group (Williams, 1970), a northeast trending, steeply dipping sequence of volcanic and sedimentary rocks. Silurian volcanic and related sedimentary rocks north of Red Indian Lake comprise the Buchans Group. Small basins of Carboniferous age sedimentary rocks occur along the shores of Red Indian Lake.

The area is bound to the north by Silurian and Devonian granites and to the south by granites and high grade metamorphic rocks of Ordovician-Silurian age (Williams, 1967).

Rocks correlative with the Exploits Group to the southwest have been referred to the Strides Group (Riley, 1957). The name is an unfortunate one since units typical of the group are not developed on Strides Lake. Thus it is proposed that the name Strides Group should be discontinued and the units included in the Exploits Group.

### Exploits Group

The lack of outcrop and poor stratigraphic and structural control make geological mapping of this Group difficult. Six lithological units have been recognized; however, the numbering of these units does not necessarily indicate a stratigraphic sequence.

Unit 1 contains most of the mafic to intermediate volcanic rocks in the area. The lithologies vary from fine grained, dark green and grey-green pillow lava and mafic flows in places feldsparphyric to agglomerates, fine grained mafic tuffs, and chlorite schists. Similar rock types also occur as discontinuous lenses within and interbedded with lithologies of units 2, 3, and 4.

Unit 2 consists of intermediate to silicic, green volcanic breccias and tuffs. It forms a distinct mappable unit across the map area, although in places it is inseparable from unit 3. The fragments are generally angular silicic volcanic rock clasts whereas the matrices vary from silicic to intermediate. The tuffs are fine grained equivalents of the breccias. Minor quartz-crystal tuff also occurs in this unit.

## LEGEND

### CARBONIFEROUS

- 12** Poorly indurated brown and grey conglomerate and sandstone

### DEVONIAN

- 11** Medium grained, equigranular biotite granite
- 10** Fine to medium grained, dark green diorite and gabbro

### SILURIAN OR LATER

- 9** Fine grained, brown to red, cross bedded, ripple marked and mud cracked sandstone; minor siltstone and basal conglomerate

### SILURIAN

- 8** BUCHANS GROUP: Mafic pillow lava, agglomerate, tuff, minor silicic volcanics, red chert beds and lenses

### MIDDLE ORDOVICIAN OR LATER

- 7** Mafic pillow lava, agglomerate, red chert and siltstone, intraformational breccia

### MIDDLE ORDOVICIAN OR EARLIER(?)

EXPLOITS GROUP (Units 1 to 6: numbers do not necessarily indicate stratigraphic order)

- 6** Fine grained, finely bedded and laminated, green and minor red siltstone, minor red chert, and minor intraformational breccia
- 5** Grey, green and black tuffs and tuffaceous siltstone, argillite, mudstone and black shale; 5a, black shale
- 4** Intermediate to basic tuff, tuffaceous greywacke, volcanogenic sediments, minor black shale
- 3** Grey to white dacite and rhyolite, quartz-crystal tuff, quartz porphyry, silicic breccia and tuff
- 2** Silicic to intermediate, grey, green and minor white volcanic breccia and tuff
- 1** Intermediate to mafic green pillow lava, massive flows, agglomerate and minor tuffs

## SYMBOLS

Geological boundary (defined, approximate, assumed) . . . . .	
Bedding (tops known, unknown) . . . . .	
Pillow bedding, tops known (inclined, overturned). . . . .	
Cleavage or schistosity (inclined, vertical). . . . .	
Anticline (defined, approximate) . . . . .	
Syncline (defined, approximate). . . . .	
Fault (defined, approximate, assumed) . . . . .	

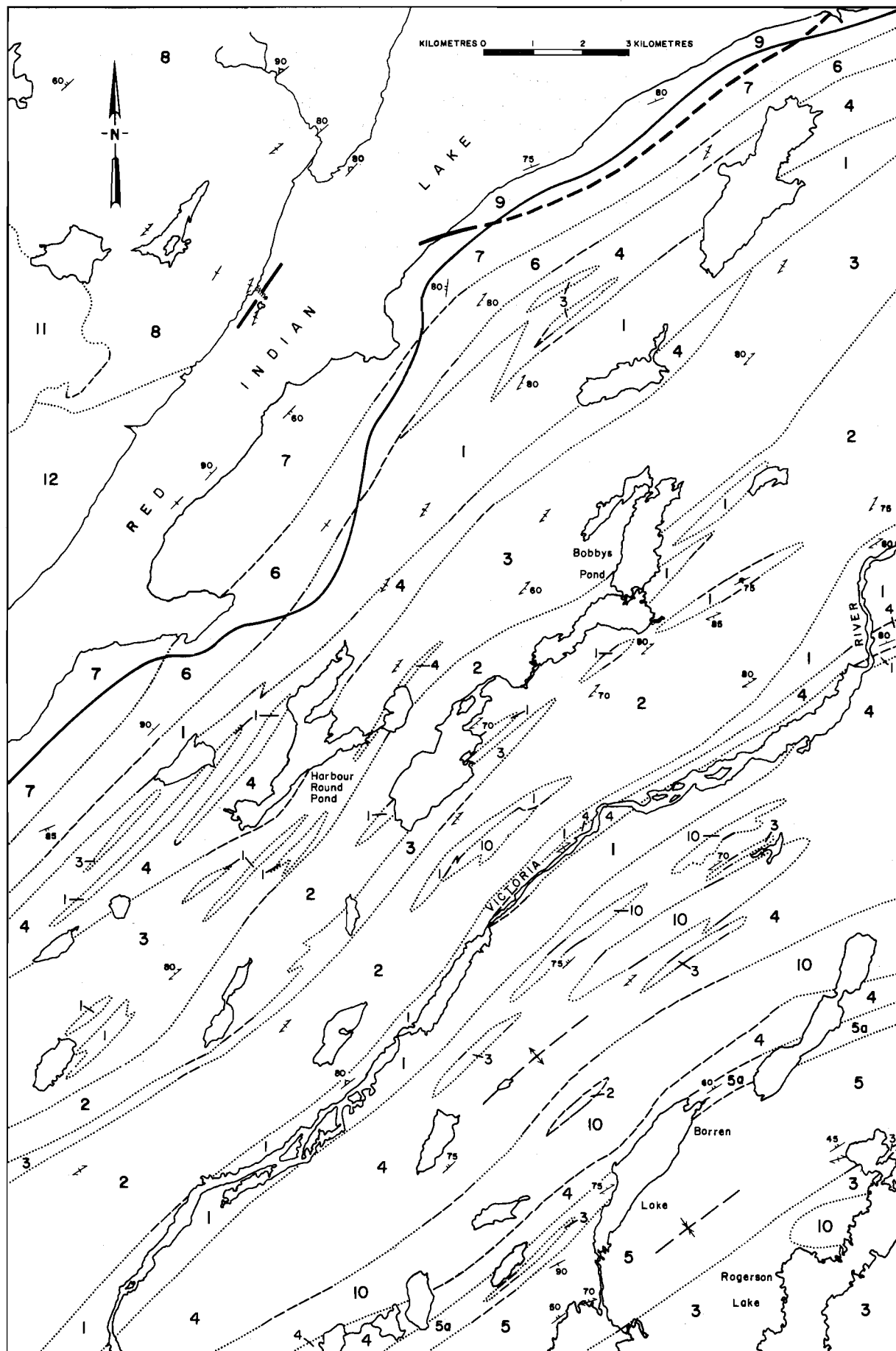


Figure 1.

Rocks of unit 3 represent an extensive stratigraphic horizon of silicic volcanic rocks that extends from Tulks Hill, southwest of the map area, to Victoria River, northeast of the map area. This unit varies from white, grey-white, green, greenish-blue to pink and buff, from massive to schistose, and from flows to pyroclastics. The lithologies comprising the unit are rhyolite and dacite breccias and minor flows, quartz-crystal tuff, quartz-eye porphyries, minor quartz-porphyrific granites and fine grained, lithic and vitric tuffs. Basic volcanic rocks (1) and greywackes (4) occur as discontinuous lenses within and intercalated with unit 3.

Unit 4 consists of bedded, grey to black, intermediate to basic tuffs, tuffaceous greywackes and volcanigenic sediments, which may in part be correlative with parts of unit 5. Unit 5 has a better developed bedding and consists of grey and green siltstone, argillite, black shale (5a is the largest black shale layer), siliceous siltstone, and chert. Tuffaceous bands occur as thin interbeds. Rocks similar to unit 5 occur intercalated with unit 3 in the southeastern parts of the map area.

Unit 6 is probably correlative with parts of unit 5. It consists of finely bedded and laminated, white-weathering, grey-green siltstone. There are minor beds and lenses of red siltstone and red chert developed locally. Intraformational breccias containing volcanic and sedimentary clasts occur in places, in particular near the top of the unit.

#### Unit 7

Rocks of unit 7 conformably overlie unit 6 of the Exploits Group; however, lithologies of this unit are different from rocks of the Exploits Group and in part resemble rocks of the Buchans Group (Unit 8). Pillow lavas, related pyroclastics, and intraformational breccias are the characteristic lithologies of unit 7. The breccias contain clasts of angular red chert (typical of parts of the Buchans Group), vesicular basalt bombs and blocks, minor red siltstone and dacite in a matrix of finely comminuted rock. The basaltic clasts in the breccia vary from 1 cm to 2 m in size. In places the breccia zones grade into fine grained red siltstones and red chert.

#### Buchans Group (Unit 8)

The Buchans Group consists of a series of volcanic and sedimentary rocks. The volcanic rocks are dark green, amygdaloidal pillow lavas, pillow breccias, agglomerates, tuffs and minor silicic rocks. The sedimentary rocks include red chert lenses and beds, particularly in the Skidder Brook area.

#### Silurian (?) Rocks (Unit 9)

Sedimentary rocks of unit 9, consisting of cross-bedded, ripple-marked and mud-cracked, red micaceous sandstone and siltstone and minor greywacke are in fault contact with rocks of unit 7 along the shores of Red Indian Lake. Open framework, clast-supported breccias at the base of the unit contain siltstone, greywacke, red sandstone, volcanic rock clasts and rare "deformed" volcanic rock clasts. The rocks are better indurated and more deformed than nearby Carboniferous rocks (12) along the shores of Red Indian Lake. This unit is lithologically correlative with red micaceous sandstone of the Silurian Botwood Group to the northeast.

#### Intrusive Rocks (Units 10 and 11)

Fine to coarse grained diorite and gabbro (10) and biotite granite (11) are undeformed and are interpreted to be posttectonic, and probably of Devonian age.

## Carboniferous Rocks (Unit 12)

Rocks of unit 12 occur as poorly indurated beds of horizontal or subhorizontal attitude. They are predominantly brown conglomerates that grade into thin lenses and beds of brown sandstone. Along Shanadithit Brook immediately west of the map area, these rocks contain fossil plants that indicate a Carboniferous age (Newhouse, 1931).

## STRUCTURAL GEOLOGY

The map area has a northeasterly trending structural grain. The area is characterized by an inhomogeneous, northeast trending, steeply dipping schistosity that is parallel to subparallel to the bedding. On the basis of work on the Victoria Lake map area to the west (Kean, 1975 a,b), this schistosity may be interpreted as a composite fabric. Small scale folds related to the regional schistositities were not observed; however, large scale tight isoclinal folds can be delineated based on stratigraphic tops.

## MINERALIZATION

The Exploits Group within the map area does not contain any significant mineral showings; however, disseminated pyrite and minor chalcopyrite is associated with units 1 and 3. Also, significant zinc, lead and copper mineralization occurs outside the map area at the southwestern (Tulks Hill Prospect) and northeastern (Victoria Mine Prospect) extensions of unit 3.

The Buchans Group hosts the Buchans base metal ore bodies and showings to the north of the map area. Within the map area, the Buchans Group hosts the Skidder Prospect (copper-zinc).

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