NEW MILFORD QUADRANGLE

Progress Report

1973 Field Season

INTRODUCTION

By the end of the 1973 field season a general reconnaissance of the south-eastern quarter of the New Milford quadrangle was completed, and approximately one-eighth of the quadrangle was mapped in detail (see map).

ROCK UNITS

In the section of the quadrangle mapped in detail, a total of five mappable rock units were delineated. These consist of a diorite gneiss, muscovite schist and micaceous quartzite, feldspathic gneiss, marble, and a series of discontinuous amphibolite units interbedded with mica schist and micaceous quartzite. A description of each rock unit is given below. All mineral assemblages are based on minerals observed in hand specimens. The minerals in each assemblage are listed in order of decreasing abundance.

BRROKFIELD DIORITE GNEISS

This unit is a medium to coarse grained (1 mm to 5 mm) light gray to black gneiss rich in hornblende and feldspar. The medium gray feldspar laths are commonly 3 to 5 mm long and are prominent because they are surrounded by black hornblende. Typical mineral assemblages found in this unit are:

hornblende - feldspar - biotite - magnetite - quartz - epidote
hornblende - feldspar - biotite - quartz - epidote - magnetite - pyrite
hornblende - feldspar - biotite - quartz - magnetite
feldspar - hornblende - quartz - biotite - epidote - magnetite

MUSCOVITE-QUARTZ SCHIST and MICACEOUS QUARTZITE

Mica-quartz schist and micaceous quartzite are interlaminated with each other. The laminae are commonly less than one inch thick. The basic difference between these two rock types is the percentage of mica vs. quartz present, the mica-quartz schist being composed of a higher percentage of mica than the micaceous quartzite.

The foliation planes in each rock type has been crenulated. However, because of the higher percentage of muscovite in the schist, the crinkle folds are more conspicuous in this rock type and the fold axes produce a prominant lineation. A quartz mineral lineation more commonly occurs on the foliation planes of the micaceous quartzite. The color of these rocks varies from silvery gray to medium gray depending on the percentage of mica present and on whether muscovite or biotite is the dominant mica. Typical mineral assemblages represented in this unit are:

muscovite - biotite - quartz - feldspar ± garnet ± staurolite ± magnetite/ilmenite
biotite - muscovite - quartz - feldspar ± garnet ± staurolite ± magnetite/ilmenite
quartz - muscovite - feldspar - biotite ± garnet ± staurolite ± magnetite/ilmenite
quartz - muscovite - biotite - feldspar ± garnet ± staurolite ± magnetite/ilmenite

MICA SCHIST and MICACEOUS QUARTZITE

This unit can be recognized from the one described above by its lower percentage of muscovite and its lack of conspicuous crinkle folds. Also, biotite, instead of muscovite, is commonly the most abundant mica in these rocks. Therefore, they lack the silvery gray color of the previous unit and more typically occurs as a medium to dark gray rock. This unit also consists of a greater variety of minerals, with garnet, staurolite, fibrolite (fine grained sillimanite), tourmaline and less commonly kyanite and epidote occurring in these rocks. The mica schist is everywhere well foliated because of the abundance of mica, but the foliation in the micaceous quartzite is commonly poorly developed. Where the percentage of mica is less than about 10% in the quartzite, this rock appears massive. Quartz and mica mineral lineations are commonly found on the foliation planes of both the schist and quartzite, and these lineations generally have approximately the same orientation as the minor fold axes found in this unit. The grain sizes of the minerals in these rocks range from .5 mm up to 5 mm. Laminae of garnet and quartz pods, flattened parallel to the foliation planes are present in two of the beds in this unit. Mineral assemblages commonly represented in this unit are:

quartz - muscovite - biotite - feldspar - magnetite/ilmenite - garnet - epidote
quartz - feldspar - garnet - hornblende - chlorite - biotite - epidote - magnetite/ilmenite
feldspar - quartz - muscovite - biotite
quartz - biotite - muscovite - sillimanite - feldspar - garnet - magnetite/ilmenite ± tourmaline
muscovite - biotite - quartz - sillimanite - feldspar - garnet - staurolite - magnetite/ilmenite ± epidote ± tourmaline
muscovite - quartz - biotite - feldspar - garnet - staurolite - chlorite - magnetite/ilmenite ± epidote ± tourmaline
muscovite - biotite - quartz - feldspar - garnet - kyanite - chlorite - magnetite/ilmenite ± epidote ± tourmaline

A series of five amphibolite horizons are interbedded with the mica schist and micaceous quartzite. The composition and texture of all the amphibolite beds are very similar. This unit predominantly consist of hornblende needles with lesser amounts of quartz and feldspar. The foliation of the hornblende is very well developed. Two distinct sets of hornblende, quartz and/or feldspar mineral lineations occur on the foliation planes. The amphibolite beds are very homogeneous in all exposures.

FELDSPATHIC GNEISS

A feldspathic gneiss is exposed along the top and on the west slope of the hill located west of Pumpkin Hill Road, starting at the southern boundary of the quadrangle and extending approximately 3/4 miles to the north. This unit looks like the diorite gneiss at first glance because it too consist of large grains of feldspar and quartz. This unit however, is interbedded with micaceous quartzite, and in many exposures contains no hornblende. It too is dark colored because biotite is very abundant in these rocks. The biotite is well foliated. Typical mineral assemblages in this unit are:

feldspar - quartz - biotite - muscovite - chlorite ± magnetite/ilmenite
quartz - feldspar - biotite - muscovite - hornblende ± magnetite/ilmenite
feldspar - quartz - hornblende - biotite - muscovite ± magnetite/ilmenite

Pegmatitic rocks occur in small quarries at the top of this hill. These rocks are rich in K-feldspar, quartz, plagioclase, muscovite and tourmaline.

More work needs to be done on this unit, and so it will be the first area studied in the 1974 field season.

MARBLE

Outcrops of marble are widely separated and are restricted to the Housatonic Valley. The predominant mineral is dolomite and/or calcite with lesser amounts of phlogopite, tremolite, diopside and sphene. Grain size varies from about .1 mm to 2 mm and the color varies from white to gray. The marble is commonly bedded. Weathered marble has a very granular texture.

STRUCTURE

No major folds or faults can be recognized from the outline of the units on the map. Many minor folds however, exist in the southeastern quarter of the quadrangle. Minor folds were found in all the units described above. In general, the minor folds are Z folds, and the orientation of the fold axes and axial planes varies. On a stereogram, the axial plane poles, fold axes and mineral lineations spread out along great circles, indicating they have been re-folded. Folded mineral lineations were observed at several outcrops. There are three general types of folds exposed. They are: isoclinal, chevron, and crinkle folds. Both bedding and foliation is deformed by these folds.

FUTURE WORK

It will take at least two and possibly three more field seasons to complete a detailed map of the New Milford quadrangle. During the 1974 field season, I hope to trace the five map units described in this report to the northern boundary of the quadrangle and further subdivide these units if possible. I also hope to map the northwestern quarter of the quadrangle.

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