Figure 41. Sample 2. Dark lower part is small part of a large sodic amphibole that almost covers thin section (2 × 3 cm); at three places on border the relationship with aegirine (middle part of field) can be seen. Amphibole and pyroxene appear to be crystallographically continuous. Upper part of field is mostly feldspar, nearly pure albite and microcline, with some quartz. Width of field ~1 mm. See table 18 for albite and microcline analyses.

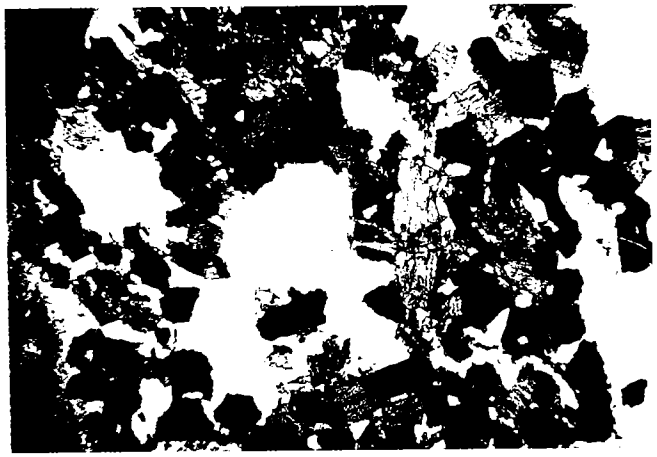

Figure 42. Sample 5. Elongate aegirine and equant amphibole (black) scattered through matrix, which is mostly feldspar. Width of field ~4 mm.

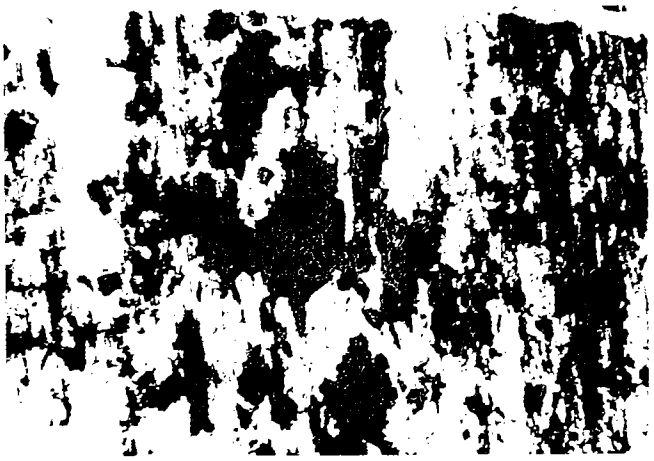

Figure 43. Sample 4. In samples 4 and 6, all sodic amphibole has been oxidized to magnetite in matrix of quartz or feldspar. Some magnetite is surrounded by needles of riebeckite. Width of field ~ 1 mm.

Figure 44. Sample 7. Titanomagnetite (black) with needles of blue riebeckite crystals along its margins in quartz (white). Gray phase is feldspar. Width of field 0.4 mm.

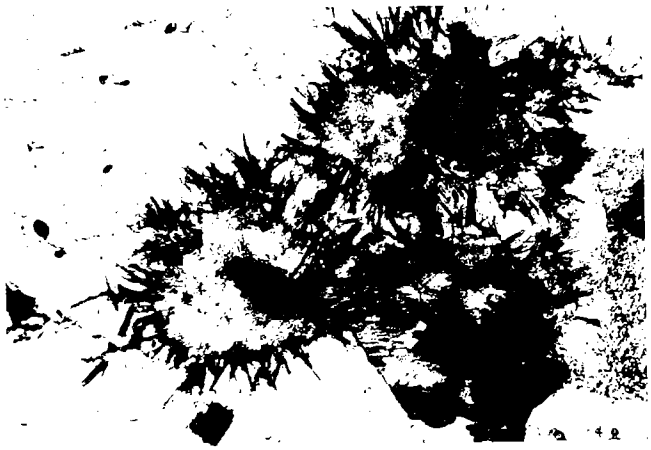

Figure 45. Sample 7. Large aegirine–augite (right side) showing varying degrees of resorption and reaction rim of magnetite. Width of field ~1 mm.

higher temperatures. However, amphiboles in samples from eastern locations 4 and 6 have been oxidized to magnetite with some acicular blue riebeckite crystals. Figure 43 shows an amphibole oxidized to magnetite (plus some riebeckite, which cannot be seen in the photomicrograph), and suggests an increase in oxygen fugacity.

The minerals, their composition, and the assemblage can be used to place some constraint on conditions of formation. The presence of magnetite + quartz places the fO_2 range below the hematite–magnetite phase boundary and above magnetite + quartz = fayalite. The pyroxene in the assemblage is almost pure $NaFeSi_2O_6$, Ti being the principal contaminant. The alkali feldspars have essentially no Ca. There are really no extraneous major phases present to complicate the relations. Thus, Ernst's data (1962; see his figs. 5 and 11b especially) can be applied directly. He showed the variation of Si/(Na + Fe + Si) with fO_2 and temperature. This ratio for