**IV. INTRODUCTION**

The western Vermont Appalachians expose rocks of the Proterozoic Laurentian basement, a Neoproterozoic rift and drift sequence, and Paleozoic passive margin sediments in the Champlain Valley and Taconic sequences. In central and eastern Vermont, tectonic activity associated with the Appalachian orogeny exposed Paleozoic rocks as well as Neoproterozoic granitoids, pelitic schists, and black shales. Superimposed on the Paleozoic sedimentary successions are Cenozoic igneous rocks of the New England Volcanic Province. Phanerozoic tectonic events in the eastern United States are characterized by a series of orogenic belts in which rocks were deformed and metamorphosed. In particular, the Appalachian orogeny, resulting from the subduction of oceanic crust northward beneath the Laurentian margin, produced a complex geologic record that includes an extensional episode followed by compressional orogenesis.

**IV. GEOCHEMISTRY**

Based on the geochemical data, the mafic rocks from the Moretown Formation are consistent with a subduction zone origin. The rare earth elements (REE) and other trace elements in the mafic rocks suggest a subduction zone affinity. The depleted nature of the mantle source is indicated by the negative Nb and Ta anomalies. The mafic rocks are similar to subduction zone-related volcanic rocks from other parts of the world.

**V. CONCLUSIONS**

The mafic rocks from the Moretown and Cram Hill Formations suggest a subduction zone origin. These rocks are consistent with the geology of the surrounding region, which includes a series of oceanic ridges, oceanic plateaus, and subduction zones. The mafic rocks from the Moretown Formation are similar to those from other parts of the Appalachians, indicating a regional setting.

**VI. REFERENCES**


**VII. ACKNOWLEDGMENTS**

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**Field relationships**

The mafic rocks from the Moretown and Cram Hill Formations suggest a subduction zone origin. These rocks are consistent with the geology of the surrounding region, which includes a series of oceanic ridges, oceanic plateaus, and subduction zones. The mafic rocks from the Moretown Formation are similar to those from other parts of the Appalachians, indicating a regional setting.