The polygenetic ophiolite complex, Washington Cascades, is documented and consists of ultramafic outcrops that contain various terrains such as troctolitic gabbro, enstatite dunite, and basalt flows. The ultramafic rocks are dominated by felsic and mafic rocks, while the basalt flows are made up of andesite, diorite, and andesite-dacite flows. The minerals present in the ultramafic rocks are olivine, pyroxene, and plagioclase, while in the basalt flows they are quartz, feldspar, and ilmenite. The basalt flows are intruded by dikes and sills, which are made up of andesite and diorite.

STATEMENT OF PROBLEM

In the southern portion of the Cascades Orogen (Fig. 1), sheeted dikes of the Esmeralda Peaks unit are common and there is an unusual occurrence within a highly fractured porphyry deposit. The dikes are variably mafic to felsic in character and are associated with hornblende gabbro sheets, which are interpreted as volcanic rocks. The Esmeralda Peaks unit is a polygenetic ophiolite complex that includes sheeted dikes, gabbro and rare tonalite and trondhjemite. A U-Pb zircon in the south and overprints mylonitic lherzolite. Mineral assemblages in the mylonitic lherzolite suggest T > 900°C from Metzger et al. (2002).

ABSTRACT

TECTONIC EVOLUTION OF THE POLYGENETIC INGALLS OPHIOLITE COMPLEX, CENTRAL CASCADES, WASHINGTON: A POSSIBLE RECORD OF JURASSIC FOREARC ACCRETION AND RIFTING?

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DESCRIPTION

The Iron Mountain unit consists primarily of highly vesicular pillow flows and sheeted basalt lava in proximity to a divergent plate boundary (Fig. 13). The divergence of the Iron Mountain unit is inferred from recent geochronology (Fig. 3). This is consistent with methods that suggest an accretion event at 192 Ma (Fig. 4). The divergence of the Iron Mountain unit is also consistent with an ophiolitic basement that is dated at 192 Ma (Fig. 5). The Iron Mountain unit consists primarily of pillow flows, near-by basalt lava and gabbro (Fig. 6). The divergence of the Iron Mountain unit could have resulted in the age relationships observed in the Peshastin Formation. This divergence was dated at 192 Ma (Fig. 7). The divergence of the Iron Mountain unit is also consistent with an ophiolitic basement that is dated at 192 Ma (Fig. 8). The divergence of the Iron Mountain unit could have resulted in the age relationships observed in the Peshastin Formation.

SELECTED REFERENCES


DISCUSSION

The divergence of the Iron Mountain unit is inferred from recent geochronology (Fig. 3). This is consistent with methods that suggest an accretion event at 192 Ma (Fig. 4). The divergence of the Iron Mountain unit is also consistent with an ophiolitic basement that is dated at 192 Ma (Fig. 5). The divergence of the Iron Mountain unit consists primarily of pillow flows, near-by basalt lava and gabbro (Fig. 6). The divergence of the Iron Mountain unit could have resulted in the age relationships observed in the Peshastin Formation. This divergence was dated at 192 Ma (Fig. 7). The divergence of the Iron Mountain unit is also consistent with an ophiolitic basement that is dated at 192 Ma (Fig. 8). The divergence of the Iron Mountain unit could have resulted in the age relationships observed in the Peshastin Formation. This divergence was dated at 192 Ma (Fig. 9). The divergence of the Iron Mountain unit is also consistent with an ophiolitic basement that is dated at 192 Ma (Fig. 10). The divergence of the Iron Mountain unit could have resulted in the age relationships observed in the Peshastin Formation. This divergence was dated at 192 Ma (Fig. 11). The divergence of the Iron Mountain unit is also consistent with an ophiolitic basement that is dated at 192 Ma (Fig. 12). The divergence of the Iron Mountain unit could have resulted in the age relationships observed in the Peshastin Formation. This divergence was dated at 192 Ma (Fig. 13).