The big faults in northern Idaho and what we know about them

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INTRODUCTION

Faults at the surface in northern Idaho are mostly within Belt Supergroup strata and igneous rocks that intrude them. Many have long and complex histories that involve basement and accommodation of Belt basin subsidence (Harrison and others, 1974; Winston, 1986b). Some moved during Jurassic through Cretaceous and perhaps Paleocene compression, and were reactivated or newly formed during Eocene extension. The following summary lists the most important faults roughly from north to south.

Moyie fault, a compressional structure within the basin and range province west of the Moyie River in northeast Idaho (Bennett and others, 1977). This fault has a low dip angle and may have been active since the late Cretaceous.

Newport fault, a right-lateral strike-slip fault extending from western Montana through Idaho to northeastern Washington State (Bennett and others, 1977). This fault has a high dip angle.

Mackay fault, a right-lateral strike-slip fault extending from western Montana through Idaho to northeastern Washington State (Bennett and others, 1977). This fault has a high dip angle.

Transpressional modification of the 87Sr/86Sr transition on the Idaho-Montana border (Gray and others, 1980). This fault has a high dip angle.

Western Idaho thrust fault, a thrust fault located south of the Idaho-Montana border (Gray and others, 1980). This fault has a high dip angle.

Salmon River basin, a structural basin located west of the Idaho-Montana border (Gray and others, 1980). This basin has a low dip angle.

A new set of faults has been discovered in northern Idaho during the past decade. These faults are associated with Eocene extension and have been active since the Eocene.

EXPLANATION

Surficial deposits and Mio-Pliocene Columbia River basalts
Eocene intrusive rocks
Cretaceous intrusive rocks
Mesozoic Mesoacous accreted terranes
Paleozoic sedimentary rocks
Proterozoic quartzite of SE Washington
Neoproterozoic-Windermere Supergroup, Deer Trail Gp., and Syringa metamorphic sequence
Metabo-Belt belt and meta-Belt Supergroup
Meta-Belt(?)/Supergroup
Proterozoic Priest River metamorphic complex
Proterozoic anorthosite
Archean gneiss
Normal fault
Strike-slip fault
Reverse or thrust fault
Sr 0.704 or 0.706 line

Fault gouge in the Osburn fault zone

48.5 Ma L-tectonic from Benton Creek fault

49°
117°
116°
BC
MFT
W
84.5 Ma L-tectonic from Benton Creek fault

Fault gouge in the Osburn fault zone

48.5 Ma L-tectonic from Benton Creek fault

49°
117°
116°
BC
MFT
W