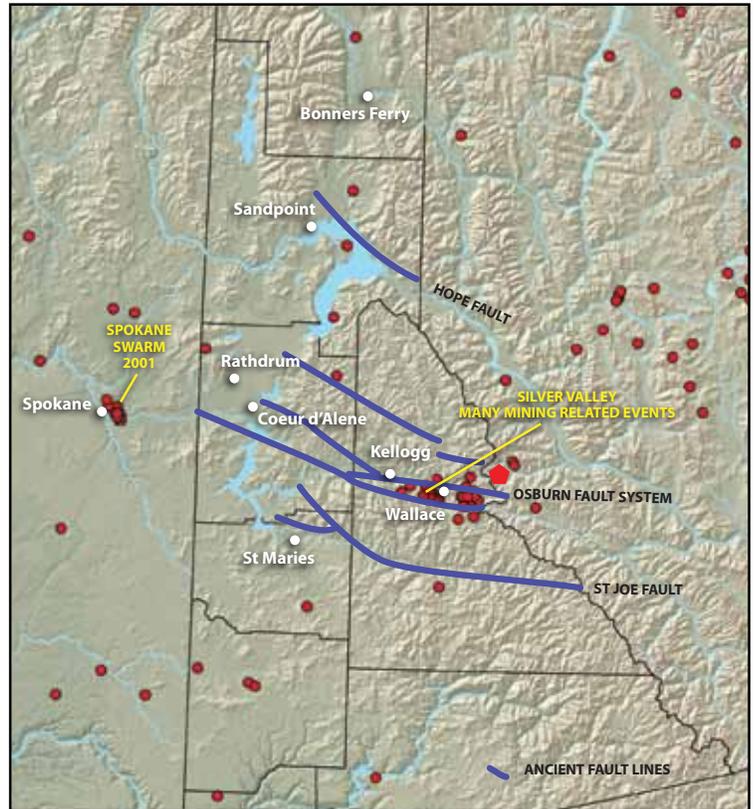


The Lewis and Clark Zone: A Seismic threat to North Idaho

The Lewis and Clark Zone is a megashear in the earth's crust, up to 30 miles wide, which cuts some 240 miles through north Idaho and northwestern Montana. Geologic studies have shown that the North American plate has been sheared along this zone repeatedly over the past billion years. The most obvious manifestation of the zone is a set of en echelon valleys that follow brittle fault zones across the grain of the northern Rocky Mountains from Helena through Missoula, Montana to Coeur d'Alene, Idaho. These valleys provided a natural transportation corridor through the mountains used in part by Lewis and Clark in 1806 and the Mullan Trail of the 1850s, and today by Interstate 90.

Along the Lewis and Clark Zone in Idaho, many mining-related seismic events, called rockbursts, have occurred. Rockbursts are spontaneous, violent fractures of rock in deep mines. The sizable magnitudes of some rockbursts, their dominant horizontal strain direction, along with their location within the Lewis and Clark Zone suggest that tectonic stress release may be involved in this mining-related seismicity.

The destructive 1935 magnitude 6.25 and 6 Helena Valley earthquakes occurred near the eastern end of the Lewis and Clark Zone in Montana. The possibility that the western end of the zone is also capable of such large earthquakes, creates a considerable earthquake shaking hazard for the residents of Wallace, Kellogg, Coeur d'Alene, Rathdrum, Sandpoint and surrounding communities.



Rockbursts are a cause of great concern in the mining industry. They are due in part to the same tectonic stresses that cause natural earthquakes. Research over the years into new mining methods by the National Institute Occupational Safety and Health (NIOSH) has greatly reduced the threat of rockbursts to miners in the Silver Valley of Idaho. (NIOSH photo).



In the eastern Lewis and Clark Zone, the city of Helena, Montana suffered through a devastating series of several hundred earthquake shocks in the month of October, 1935 including three damaging earthquakes on October 12th, 18th, and the 31st. Previous to this cluster of tremors there had been little recorded seismic activity in the area of Helena. The photo shows damage to the Bryant Elementary School after the October 31st aftershock. (Montana Historical Society and Bureau of Mines and Geology photo).

