

Earthquakes and tsunamis of eastern Canada: cause for concern?

A. Ruffman

Geomarine Associates Limited, P.O. Box 41, Station M, 5112 Prince Street, Halifax, Nova Scotia B3J 2L4, Canada

The known earthquake seismic source zones of most concern to the populated areas of eastern Canada are the Charlevoix, Passamaquoddy and offshore Laurentian Slope seismic zones where major earthquakes of magnitudes 7.0, 5.7 and 7.2 occurred in 1925, 1869 and 1929, respectively. The Passamaquoddy area experienced a 5.9 event in 1904 and the Charlevoix area a 6.0 event in 1988 with the Laurentian Slope having had about nine events 5.0 or greater since 1929 up to 1977; all nine may have been simply aftershocks.

Events greater than 5.0 were not known in the Passamaquoddy Seismic Zone when the Lepreau CANDU Nuclear Generating Station was designed in 1975 for a maximum magnitude 6.0 event 20 km from the site. There are some indications of a seismic zone offshore in the Gulf of Maine and

the New Year's Eve 1882 event may yet prove to be a significant earthquake centred in the Gulf of Maine. The January 9, 1982 earthquake of 5.7 in the north-central part of New Brunswick has led to the realisation that this area along with the Moncton area (1817 - 5.2) are zones of lesser seismic concern.

Only the 1929 tsunami is known to have been fatal and it stands as Canada's most tragic earthquake with a death toll of 28; the loss of life has recently been lowered by one with the Cape Breton loss of John MacLeod (actually John Young) now disproved by oral history. Other less serious tsunamis have occurred in 1755, 1848, 1864 and 1914 with apparent tsunamis in 1813, 1843 and 1908.