The use of such unmanned stations changes the whole nature of the monitoring problem. It also brings into focus Canada's potential role in developing technologies appropriate to this new situation. The key question has now become: How well can events be monitored if stations can be located close to the source of the explosion?

The answer is not a simple one. As Dr. Basham points out, a seismic wave that has travelled a great distance through the Earth's mantle, even though it has lost part of its strength in the process, has a relatively simple seismic signature. By contrast, a shock that has travelled only 500–1000 kilometres may be very complex in wave form, because it will have encountered a myriad of local complexities in the Earth's crust that generate weak but locally recordable signals.

Canada is important so far as on-going research into unmanned seismic stations is concerned. This is because most of Canada sits on a huge ancient rock mass, known as the Precambrian Shield, which is geologically similar to the great continental rock masses that underlie much of Europe and Asia. Canada, thus, in a geophysical sense, resembles the USSR and is therefore a testing ground where a great deal can be learned about close-in seismological techniques that might be applicable to a remotely controlled network within the USSR. Canadian seismographs are also relatively close to, and on the same continental mass as, the Nevada Test Site, the region selected for most USA tests (see Figure 3).

Meanwhile, the USA, in order to gain experience in the operation and operational capabilities of its new remote sensing stations, has installed a North American network of five units, known as the Regional Seismic Test Network. Two of these, by mutual arrangement, are in Canada. One is at Red Lake, Ontario, and the second is near Yellowknife, close to the Canadian array. It will thus be possible to compare the performances of the two, quite different, Yellowknife stations.