

## Shaky argument

Tom Curtin of UK Nirex would do well to read one of Nirex's own scientific reports before he denies that Sellafield is an earthquake-prone site (Letters, 16 November, p 60). The *Nirex Report on Seismological Database*, SA/95/003, May 1995, shows that it is very likely that several earthquakes of local magnitude 4.7 or greater will occur in the area within the next 10 000 years. These magnitudes are among the largest experienced in Britain, for which an independent nationwide catalogue has been published by Roger Musson of the British Geological Survey (see the excellent Web pages at <http://www.gserg.nmh.ac.uk> for details).

Let us look at the facts. The Whitehaven earthquake of 11 August 1786 is listed in the Nirex catalogue as magnitude 4.7, using a surface wave scale derived from macroseismic intensity data. In Musson's catalogue it is estimated as 5.0 (local magnitude). Its epicentre was only about 12 kilometres north of the Sellafield potential radioactive waste repository zone, and the focus was at a depth of between 5 and 15 kilometres.

Even more worrying is the report of the Rampside or Barrow earthquake of 15 February 1865, which was about 40 kilometres along the geological strike to the south. Although of small magnitude (2.2 or 3.0, depending upon the method of estimation), its focus was extremely shallow—probably less than 1 kilometre down—and it pumped some 100 000 cubic metres of water to the surface. This is a very rare occurrence indeed in the historical records, and is obviously of concern to those of us who wish Britain to select a radioactive waste dump site which is supposed to be safe for at least 10 000 years.

As Stuart Haszeldine of Glasgow University showed in his evidence to the inquiry, this event occurred within the same geological context as the proposed dump site. Curtin is wide of the mark in his reference to geological faults. It doesn't matter that we cannot normally ascribe even shallow instrumentally located earthquakes to specific faults—it is the dynamic geological regime that matters.

Lastly, Nirex claims to have "rebutted" the scientific evidence presented by the objectors at the recent planning inquiry (In Brief, 16 November, p 11), and now published in a 520-page compilation by the University of Glasgow.

Rebutted it may be, but refuted it certainly was not. Any scientist understands the crucial difference between these two verbs. Our book is intended to widen the debate, and shows that promises made to the inquiry inspector about further research work Nirex would undertake this year have already been broken.

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