

extremely low ambient temperature, or with older tritium boost gas than had been used in the test. But suspected deficiencies of this type could have been countered by non-nuclear measures.

Although nuclear redesign or the substitution of a new development was sometimes the preferred "remedy", this was certainly not necessary. For the future, there is technical agreement between those in the weapon laboratories and those outside that a vigilant programme of stockpile inspection and non-nuclear testing will suffice to reveal potential problems. These problems can then be remedied by re-manufacturing the warheads to the original specifications. Fifty years from now that may not be the most convenient approach, since industrial processes will surely change, but it will just as surely be a feasible one.

The proposal is not to keep individual nuclear warheads reliable for 100 years, which would lead to a whole new field of weapon geriatrics, but to remanufacture them after 10-15 years, so that one would always be dealing with weapons precisely of an age and type with which the weapon establishments have experience.

#### Maintaining expertise

It is inevitable that the technological base for weapon development and stockpile maintenance will erode under a CTBT, but this process is likely to be gradual. Moreover, it is likely that the nuclear-weapon States would continue to give considerable support of their weapon laboratories, in order to ensure that essential expertise is not lost.

To prevent a kind of genetic drift by the accumulation of small changes, each one "certified" to be insignificant by a responsible board, is a matter of putting in place a board composed of responsible technical people interested in maintaining the stockpile at initial performance, rather than in incorporating "bright" ideas.

Expertise can also be maintained in the study of inertial confinement fusion (ICF), and there is, in fact, a problem of definition if one approaches useful power release from multiple explosions of tiny pellets in the ICF programme.

In the context of a CTBT, a possible approach would be to announce in advance the location and time of every explosion of any kind with an explosive yield above 10 tons, and to carry out nuclear-related explosions, such as ICF, only in permanently occupied buildings.

### III. Verification of compliance with a CTBT

A CTBT would need to be accompanied by a global verification system. The principal component of such a system would be an international monitoring network of sensitive seismic stations. Such a system should make use of the most recent technological advances and also incorporate high-quality stations of the array type. On-site challenge inspection, use of satellite imagery,