

The stewardship of conscience

Researchers contributing to the 'stockpile stewardship programme' should face the truth about its potential role in maintaining US reliance on the use of nuclear weapons.

Recent efforts by US nuclear weapons laboratories to engage in deeper and broader collaboration with university researchers have encountered a number of practical obstacles, including the role of foreign faculty and staff in such partnerships (see *Nature* 391, 311; 1998). So far, however, they have not faced any serious resistance on university campuses to acceptance of the money.

Defenders of these partnerships have argued, with some success, that the research they will carry out will not support the development of nuclear weapons as such, but merely assist the weapons laboratories in their new mission of assuring the "safety and reliability" of existing weapons through the \$4.5-billion-a-year science-based stockpile stewardship programme. The problem is that this programme is not needed to ensure either the safety or the reliability of the existing stockpile. That is already quite safe and reliable, and could be kept so indefinitely by means of a small remanufacturing programme (see Ray E. Kidder, *Nature* 386, 645; 1997).

The real aims of science-based stockpile stewardship appear to be twofold. The first, which cannot be publicly acknowledged, is to maintain the three nuclear weapons laboratories at their Cold War level, so that Washington does not have to make politically painful choices. The second — also seldom discussed, but at least acknowledged in Department of Energy documents — is the long-term maintenance of a US nuclear weapons design capability.

These aims overlap, but are not identical. The laboratories at Sandia and Los Alamos are by far the main source of federal largesse in the state of New Mexico, whose senior senator, Pete Domenici, happens to chair the Senate's Budget Committee. The Lawrence Livermore laboratory is seen in northern California as a vital technological resource. It became clear early in President Bill Clinton's second term that the laboratory would not close or change its mission, whatever advice the administration received to the contrary.

The need for a future weapons capability compounds these blunt political considerations. The Clinton administration has a policy of

not developing new weapons at present, but the stockpile stewardship plan states clearly that the capability to do so must be maintained. Major facilities, such as the National Ignition Facility at Livermore, are intended to help realize that goal. So are the partnerships with the universities.

One of these, at the University of Utah, has kept critics at bay by arguing that it will model only issues pertinent to nuclear weapons safety. What, then, of the other partnerships that will model explosive shock, or turbulence — both problems more directly tied to bomb simulation? Scientists at all five university partnerships point out that they are doing unclassified work only in basic physics. But the objective of that work, from the funder's viewpoint, is to lay the groundwork for as complete a simulation of nuclear weapons as is possible in the absence of testing.

The university scientists also claim that, by supporting the stockpile stewardship programme, they are enabling the United States to comply with the Comprehensive Test Ban Treaty (CTBT), which most support. But the programme helps the CTBT only by injecting so much money into the weapons laboratories that their directors will desist from undermining the treaty in the Congress. And the argument that the programme reflects the will of the president and of the Congress, a political tapestry that patches together various special interests, is not a reasonable basis for a university to decide what it will and will not expect its staff and students to do.

Rather than telling the public the truth about the stockpile stewardship programme, however, the scientific community has put aside obvious questions and quietly accepted the money. In doing so, it has implicitly endorsed a military posture that remains heavily reliant on weapons of mass destruction. General Lee Butler, former chief of the Strategic Bomber Command, recently called for this posture to be changed. Scientists with a conscience should follow his example and suggest how nuclear weapons research can be curtailed rather than expanded. □

Time to sweeten a bitter pill

New Zealand needs to show renewed imagination if reforms of its science base are to succeed in the long term.

It would be a shame if lack of financial imagination on the part of the New Zealand government were to undermine the bold experiment in science funding that has been under way since the early 1990s. The exercise, whatever its successes, has been painful for many of those involved. Signs that government enthusiasm may be waning for the measures needed to take full advantage of the changes will do little to raise morale in the research community (see page 426).

The essence of the experiment involved severing the close links between the government and the research activities for which it had previously been directly responsible. This was achieved by placing the relationship on a 'purchaser/provider' basis, and included breaking up the former Department of Scientific and Industrial Research. The strategy has not been without its successes. Several of the autonomous 'Crown research institutes' that now act as the principal 'providers' of government-funded research have achieved healthy surpluses on

research contracts negotiated with both government departments and private industry. And the Marsden Fund, set up in 1994 to provide competitive, non-targeted grants, has done much to demonstrate that the country remains committed to some basic research.

But major problems remain. Some are a by-product of the new approach; an increasing reliance on short-term contracts has dented the attractiveness of science as a stable career. Others remain from before. So far, for example, the country's predominantly resource-based industries have shown little enthusiasm for increasing their investment in research. The challenge facing the New Zealand government is how to reap the benefits of the changes without destroying the future strength of its research base through excessive faith in either the effectiveness of market mechanisms or the political appeal of welfare spending. A new burst of imagination is called for; the country — and its researchers — deserve no less. □