

Past, present and future

Decommissioning improbable

New proposals to overhaul the UK's nuclear decommissioning policy could mean that some nuclear sites are never fully cleaned up. By Ian Jackson

At the end of this month the UK's Labour government will conclude its three-month public consultation on modernising the policy for decommissioning of the UK's nuclear facilities. The new policy statement, last revised in 1995 under the former Conservative government, appears to signal that Britain has quietly given up on ever fully cleaning up its nuclear legacy.

For once, both sides of the nuclear debate – business and green groups – stand to lose: business needs tough clean-up standards to drive innovation and generate revenues; greens want tough standards to save the world from a perceived nuclear threat.

REFORM BY STEALTH

The British government has pointed out that the proposed new policy retains many of the key principles of the original 1995 policy statement – decommissioning should be undertaken when it is reasonably practical to do so, regulatory approvals will still be required and plant operators must not take steps which foreclose decommissioning options. So what has changed?

At the heart of the new policy is the government's view that there might, in the future, be more potential uses for decommissioned sites than was previously considered, and that restoration to unrestricted use will not always represent the best practicable environmental option. This might be the case for high land value premises located within commuting distance of London such as Harwell in Oxfordshire, Burghfield in Berkshire or Winfrith in Dorset, where, paradoxically, there is a strong economic case for full clean-up anyway. But land use arguments stand up less well for the remaining 21 major nuclear installations spread widely around the UK. Even over relatively long commercial timeframes it's hard to see remote sites such as Sellafield or Dounreay becoming economic centres.

A more cynical argument is that these redundant nuclear sites are to be kept waiting in the wings as possible locations for new nuclear power plants or even as potential locations for nuclear waste repositories. Around 24 major nuclear sites exist in the UK so at least one might become an attractive option for a new nuclear power station or a repository. But this doesn't stand up to scrutiny either. The government's energy white paper, published in February 2003, promised only to keep the nuclear option open. For its part, Nirex, the UK radioactive waste management agency, has emphasised the need to take considered siting decisions on any future waste disposal facility, rather than allow sites to become self-selected based upon their past association with nuclear use.

So what really lies behind the government's new decommissioning policy? The most likely reason for changing decommissioning policy is to fix problems associated today with Britain's nuclear environmental regulatory system.

ETHICS AND ECONOMICS

In contrast to the USA, the British nuclear regulatory system is based on setting broad environmental goals rather than fixed standards for clean-up. In practice, this means that clean-up decisions are made on a case-by-case basis. It is very difficult to pin down the regulators on precisely what is acceptable and what isn't. In effect, the regulators ask operators to explain what they plan to do, and the regulators say whether they think it can be done better. Inconsistencies in decision-making inevitably arise. The lack of prescription has hit some nuclear operators heavily in the past. In September last year, a parliamentary oversight report by the influential Commons Public Accounts Committee highlighted a 62% cost overrun of £357 million (\$648 million) in the cost of new nuclear submarine



facilities at Devonport and singled out regulatory factors as the main cause. But these numbers are relatively small compared with the estimated size of the clean-up problem at Sellafield (£27.5 billion, \$49.9 billion) and Dounreay (£3.9 billion, \$6.9 billion) which are of almost unfathomable complexity.

The government has hired independent American consultants Bechtel to help get the UK's new Nuclear Decommissioning Authority (NDA) up and running by 2005. They have done a terrific job of baselining the approximate size of the nuclear legacy problem and have developed a systematic programme of near term work plans (NTWPs) and lifecycle baselines (LCBLs) for planning the decommissioning and clean-up of Britain's civil nuclear sites.

Nevertheless, as might be expected with such a complex project, significant knowledge gaps will remain for some time and lifecycle costs are especially vulnerable to changes in regulatory factors. In reality, there is

no ethically unproblematic option to nuclear clean-up, no clear correct answer. This is in contrast to the view that costs and benefits can always be reduced to a common financial scale, which, in effect, denies the possibility of genuine business dilemmas.

DELAYED CLEAN-UP

The main feature of the new policy is a move by government to distance itself from the prevailing regulatory concept of employing the best practicable environmental option (BPEO) for clean-up. The government argues that BPEO sometimes has insufficient flexibility, for example in circumstances where it may be more environmentally disruptive to move radioactive contamination from one location to another – in Britain sometimes referred to as the ‘dig and Drigg’ approach, named after the national radioactive waste disposal facility for low-level wastes at Drigg in northern England.

This has echoes of the US Department of Energy’s (DoE’s) unsuccessful attempt last year to reclassify some of its own high-level waste (HLW) at Hanford to allow on-site disposal, which was vigorously challenged by environmental opponents. So far the US courts have resisted any relaxation of the rules on radioactive waste classification. But if allowed to proceed, DoE would reclassify some 75% of the HLW at Hanford, saving \$20 billion in waste processing costs through on-site disposal.

The British policy also appears to be signalling that some nuclear sites might never be fully cleaned up to unrestricted use and emphasises the need for interim storage capability of decommissioning wastes. This is a pragmatic response to uncertainties about the uses of decommissioned sites many years in the future, but it has both economic and environmental disadvantages.

The US approach to reducing nuclear decommissioning costs relies on accelerating the LCBL work programme to shorten the overall timescale for decommissioning by about a half (from 70 to 30 years), in order to reduce total lifecycle costs. But if UK nuclear sites are never finally cleaned up to a standard allowing unrestricted future use, then the lifecycle cost might potentially remain open-ended and liabilities continue for ever.

This will mean that sites must remain under some degree of public sector control and doesn’t sit very com-

fortably with the principles of modern corporate governance or corporate social responsibility. There are environmental drawbacks too: contamination tends to spread, increasing the size of the clean-up problem. Early remediation might cut costs.

The government’s decommissioning policy envisages a range of different end uses for nuclear sites, ranging from industrial and commercial use to unrestricted use. This approach is very similar to British law dealing with chemically contaminated land. But it has very real business and environmental drawbacks. For example, the environment director of Barclays bank has pointed out that even after a favourable scientific assessment of the environmental status of a commercial property has been completed, lenders funding investment, and crucially their professional advisors, must consider what a buyer would actually be prepared to pay for it, especially if the banks might need to recover their business loan. This is where judgements must be made of market sentiment, where logic and science sometimes have to take second place. Losses of several million pounds have been incurred by investors associated with only lightly contaminated properties.

There are also environmental drawbacks with applying a ‘suitable for use’ approach because industrial plants at nuclear installations are often covered by the requirements of the European Integrated Pollution and Prevention Control directive (IPPC). Generally – as the government’s Department for Environment, Food and Rural Affairs has pointed out in its national guidance – IPPC sites must be returned to their original condition after decommissioning. This requirement extends to the entire installation, not just an individual chemical plant on the site.

COMMUNITY EXPERIENCE

There is also a strong link between clean-up expectations and reduced dependence on nuclear employment. As a general rule, clean-up standards which might be acceptable for one generation tend not to be good enough for the next.

When nuclear employment declines during decommissioning, the economy of the local community becomes less dependent. Rachel Squire, a member of the UK parliament, has pointed out that since 1990 around 10,000 nuclear jobs have been lost at the Rosyth naval base in Scotland. This has altered the community’s acceptance of a trade off between work and the environment. As the jobs have gone, demand has grown

for the removal of decommissioned nuclear submarines and their waste.

A similar picture has emerged in Berkshire where the Atomic Weapons Establishment (AWE) no longer dominates local employment. The local community now demands high environmental clean-up standards.

Realistically, it is unlikely that a ‘suitable for use’ approach will be acceptable to other communities in which former nuclear installations are located. Clean-up expectations will probably increase as local nuclear employment declines. This is significant because, in December 2003, the government published a strategic review of the future of BNFL which recognised that “in the long term, the west Cumbrian economy will need to diversify as Sellafield makes the transition from a commercial nuclear site through to clean-up.” The review predicted that job numbers would remain stable over the next 5-10 years, or possibly increase, but in the long term, some job losses would be inevitable.

A new strategic task force is being set up to help tackle and offset these problems by regenerating the local economy so that it is less dependent on employment at Sellafield. Similar community pressures on clean-up have been felt internationally too.

TRANSPARENT STANDARDS

The government’s decommissioning policy needs to move to a position where good environmental performance is seen to add real value, rather than be perceived as a regulatory straightjacket on nuclear operations. Setting tough but transparent standards for clean-up has two clear advantages, it provides a driver for innovation, because clean technologies don’t just happen by themselves, and it reduces lifecycle costs by establishing a common end-point for site decommissioning.

Perhaps the biggest problem with Britain’s new nuclear decommissioning policy is that it just doesn’t go far enough. An unambiguous set of clean-up standards is needed to fix public sector nuclear decommissioning costs once and for all. At the very least it ought to be possible to establish standard processes and procedures, enabling a common baseline for minimum acceptable levels of nuclear clean-up. Some sort of *lingua franca* is badly needed to help nuclear operators, regulators and the public to communicate on a level playing field and finally agree how clean is ‘clean enough’.

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