SAFE ENERGY

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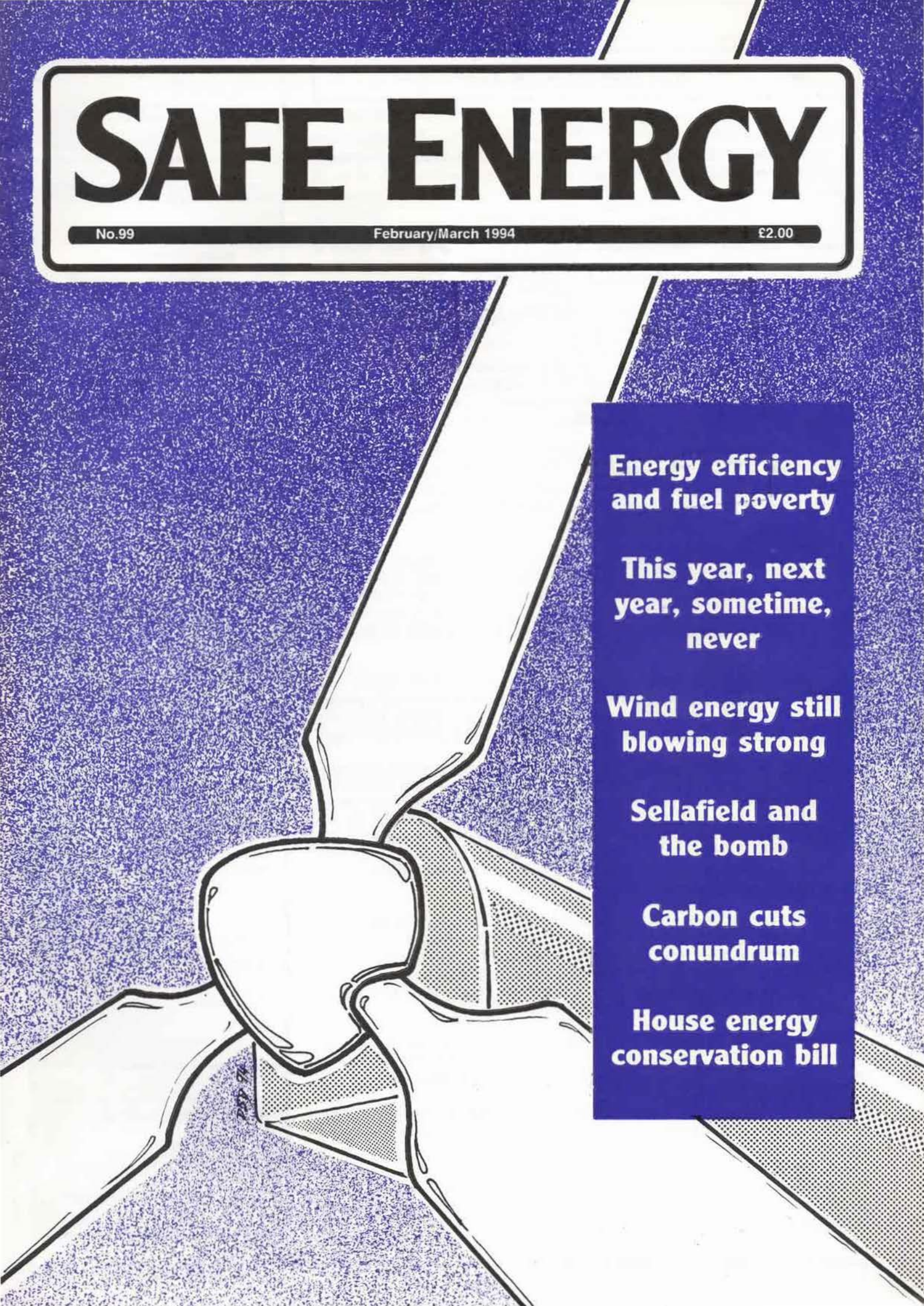

Energy efficiency and fuel poverty

This year, next year, sometime, never

Wind energy still blowing strong

Sellafield and the bomb

Carbon cuts conundrum

House energy conservation bill

COMMENT

Information obtained by *Safe Energy* confirms that Scotland's first renewables order, four years behind England and Wales, is woefully inadequate. The 30-40MW order will be oversubscribed by 10 to 20 times.

The level of oversubscription doesn't of itself prove the scheme inadequate, a similar excess occurred in England and Wales. What it does show is sufficient demand for the order to have been larger had the Secretary of State for Scotland and his advisers so wished.

But they chose to ignore submissions from SCRAM and many others which argued for a more ambitious target.

The chosen figure, 150MW by the year 2000, appears to have been selected solely on a per capita share of the UK target of 1,500MW. This takes no account of the larger resource in Scotland or, indeed, the Secretary of State's aims for the Scottish Renewables Obligation (SRO):

> *"Government policy is to stimulate development of new and renewable energy technologies where they have prospects of being economically attractive and environmentally acceptable in order to contribute to diverse, secure and sustainable energy supplies, the reduction in the emission of pollutants, and the encouragement of the renewable energy industry."*

However, within up to five technology bands, the key criterion in project selection will be price, thus undermining the development aspect of the scheme and threatening the environmental acceptability. The size of the target means that little will be done to reduce emission of pollutants and, crucially, it is far too small to encourage a renewable energy industry in Scotland.

If the SRO turns out to be for developers from south of the border and overseas to set up projects in environmentally sensitive areas using imported technology for their own profit, while increasing, however little, electricity bills for Scottish consumers, it will be a major setback for renewable energy.

And things may get even worse. A new Department of Trade and Industry report on the potential for renewable energy in Scotland ("Scottish renewables study", p21) identifies over 8,000MW of renewable energy at below 10p per unit, 1,500MW of which could be accommodated by the present transmission system. However, the main thrust of the report is not the development of renewables for local communities, but for the electricity to be sucked south by England — presumably so it can meet its environmental commitments.

There is already vociferous opposition to ScottishPower's plan for 200 pylons stretching for 40 miles across Ayrshire so that the company can export electricity to Northern Ireland. (A move rumoured to be connected with Ulster Unionist support for John Major's beleaguered administration.) And this follows a row over upgrading of the west coast interconnector to England, from which the dust has yet to settle.

Scotland has the best wind and wave resource in Europe. If attempts are made to exploit this without due regard to local communities, while the profits, jobs and electricity go to others, it could kill of the nascent industry entirely.

The SRO is an ill thought out, tokenist measure produced by a government which refuses to face up to the need for an energy policy of any sort, let alone a sustainable one.

It is not too late for Ian Lang to see sense, expand the renewables order, put community involvement above cost, and invest in Scottish industry to allow it a toe-hold in a market with worldwide potential.

The *Safe Energy* journal is produced bi-monthly for the British anti-nuclear and safe energy movements by the Scottish Campaign to Resist the Atomic Menace. Views expressed in articles appearing in this journal are not necessarily those of SCRAM.

scram, *skram*, *v.*
to shut-down a nuclear reactor in an emergency.

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FEATURES

Nirex critical

A former Sellafield scientist has warned that the Nirex repository could turn into an uncontrollable, plutonium-fuelled, nuclear reactor which would create new pathways for radioactive particles to return to the surface.

Dr Derek Ockenden, who worked on plutonium chemistry at Sellafield for almost 40 years until he retired four years ago, and now acts as a consultant to the Atomic Energy Authority, believes the company is not paying enough attention to the possibility.

The repository site, some 800m below the village of Gosforth, experiences considerable underground water movement. Ockenden believes Nirex has failed to fully understand how plutonium would behave in such conditions — a scenario directly relevant to his area of expertise.

He warns that underground water moving through the repository could carry microscopic particles of plutonium into cracks and fissures in the rock. Over time a critical mass of plutonium could be built up: "There are hundreds of kilograms of insoluble plutonium oxide in the waste — that's my worry.

"You only need half a kilogram of plutonium in water to go critical."

The plutonium would not explode like a bomb, says Ockenden, it would be more like a miniature Sizewell pressurised water reactor: "You could get pretty uncontrollable criticality excursions. There would be a nasty release of radiation, heat, steam and pressure down below."

Nirex's director of science, Dr John Holmes, says the company has investigated the possibility but "can't find a problem." Dr Holmes said they are engaged in sophisticated computer modelling which will continue for several years, until Nirex is satisfied a full planning application can be made, in 1998 or 1999.

Ockenden, who lives in Gosforth, is "worried about fairly academic guys, a long way from Sellafield putting assumptions into computer programmes and coming up with answers that are not right ... I am not a computer man but some of their assumptions have been pretty far-out."

■ Nirex expects to apply for planning permission to build a rock characterisation facility sometime over the next few months. ❑

Nuclear futures

DECOMMISSIONING Britain's nuclear power stations will cost £18 billion, according to a new report from the all-party Commons Public Accounts Committee, a sum the committee says the industry will not be able to pay.

The committee criticises the government's tardy handling of the nuclear industry's liabilities provisions which, it says, were ignored by government until the failed attempt to privatise the industry: "We further note that the estimated costs were increased several times in the run-up to anticipated privatisation and have been reduced since the decision not to privatise." Estimated costs have risen from £1.1 billion in 1987.

Despite the fact that the government is already committed to meeting £5-6 billion of the bill, including an as yet unused grant of £716 million for decommissioning Scottish Nuclear's (SNL) Hunterston A magnox station. The committee has rejected nuclear industry claims that it could bear the costs in future.

The committee has also warned that SNL will become technically insolvent by 1994/95. The company has expressed confidence that this will not happen as it is taking "vigorous steps" to increase output and reduce overheads.

News of the spiralling costs and the industry's inability to meet them could not have come at a worse time for the government. It can only further complicate arguments raging within Whitehall over the terms of reference for the forthcoming nuclear review.

According to a report in the *Independent* newspaper, the Department of the Environment (DoE) is furious at the way it believes the Department of Trade and Industry (DTI) plans to "steamroller the privatisation of the nuclear industry through Cabinet." The DTI wants to restrict the scope of the review to considering the viability of privatisation and the building of another pressurised water reactor at Sizewell in Suffolk. The environment secretary John Gummer is expected to exclude himself from the ministerial decision as Sizewell is in his constituency. However, he is believed to be deeply unhappy about plans to exclude environmental considerations from the review.

Supported by the Treasury, the DoE wants a wide-ranging review to include consideration of the environment and of the long-term costs of storage for nuclear fuel from the next generation of nuclear stations.

Nuclear Electric's (NE) chair, John Collier, has said that if establishing a separate 'ring-fenced' fund for decommissioning power stations and managing their waste helps make the case for privatisation then the company will not stand in the way. He has also conceded that a sale is unlikely to involve NE's magnox stations. The withdrawal of the magnox stations from the governments earlier attempt to privatise the industry foreshadowed the withdrawal of the entire industry from the privatisation of the electricity supply industry.

The separate fund would operate like a pension fund, with the proceeds of its investments being used for waste management and decommissioning. Instead of NE managing the provisions on its balance sheet it would make payments to the fund, losing the benefit of part of its cash flow.

Meanwhile the prime minister, John Major, said at the end of January that he could foresee a growth in the nuclear programme on environmental grounds, although this was "only a hunch so I would prefer to wait for professional advice." Perhaps this means he will add his weight to the DoE and the Treasury in pushing for a wide-ranging review. Then again, perhaps not. ❑

Hannds-on

SCOTTISH NUCLEAR (SNL) has again expressed its concern over the lack of a coherent UK energy strategy, condemning dogged adherence to free market philosophies which it warns "could have serious implications for secure long-term energy supplies and may damage vital areas of our industrial infrastructure."

In a new report* the company argues that "the present energy framework needs to be adjusted to take account of generally accepted long-term energy concerns, especially arising from the explosion in world population and the risks attached to global warming.

"Without the adjustment, the particular characteristics of the energy sector that make it prone to market failure will result in an imbalanced investment pattern leading to an over-reliance on one particular fuel, gas, and a steady decline in nuclear, coal and even renewables generation."

Among SNL's recommendations is the provision of accurate information by an independent and accountable energy agency. Such an agency would be tasked with formulating and implementing a long-term energy strategy.

The centrepiece of SNL's discussion document is the concept of energy auctions, which would help to match investment patterns with the "long-term needs of the country".

"The capacity, type and location of the [future] plant would take into consideration issues such as long-term security of supply, the need for diversity in fuel sourcing, the promotion of competition, the impact of environmental targets and the health of the UK balance of payments."

Realising that such auctions may not attract bids from some sectors, such as clean coal, nuclear or renewables, without some form of government support, SNL suggests that "recently introduced joint public/private sector financing initiative[s] could be extended to the electricity sector in order to attract the sufficient level of private sector involvement." ❑

*** "The need for an energy framework", SNL, Peel Park, East Kilbride, G74 5PR. Tel: 03552 62000 Fax: 03552 62626.**

Thorp contracts

REGARDLESS of the High Court's verdict on the legality of the government's decision, in the absence of a pubic inquiry, to allow British Nuclear Fuels to begin operating the Thermal Oxide Reprocessing Plant (Thorp), the plant's future looks far from certain.

Any one of a number of factors could spell the end for the plant, even if BNFL manages to contaminate it creating a massive decommissioning problem and bill.

Pressure is mounting in the US for President Clinton to back his strong words warning of the serious proliferation concerns facing the world as plutonium stockpiles continue to grow. Campaigners and Congressmen have expressed their dismay over the President's decision to allow a 35-ton shipment of spent nuclear fuel from the Beznua station in Switzerland. The US supplied the original fuel for the reactor under terms which allows them control over its movement.

Tom Lantos and several other Congressmen have drawn the President's attention to a letter he sent Congress last year saying that the reprocessing and stockpiling of plutonium for civil or military purposes constituted a serious threat to US security and increased the possibility that weapons-grade material could fall into the hands of terrorists: "The US does not encourage the civil use of plutonium ... the continued production is not justified on either economic or national security grounds and its accumulation creates serious proliferation and security dangers."

Thorp endorsement

The Swiss shipment will yield around 400kg of weapons-usable plutonium and, says Lantos, "would surely be construed as an implicit endorsement of Thorp."

There is growing fear in the US over the spread of nuclear weapons, a fear which is further fuelled by growing concern that North Korea may have already developed a small number of weapons. If US diplomatic efforts are to be successful in preventing an arms race in east Asia then it must maintain a consistent policy towards the production and transport of weapons-grade material. It can only be a matter of time before Clinton bows to pressure from his electorate at home rather than that from foreign governments.

One of Thorp's biggest customers, Germany, is moving swiftly towards the abandonment of a law which dictates that spent fuel should be reprocessed. The move is supported by research at the Karlsruhe Nuclear Research Centre which shows that interim storage of spent fuel followed by direct disposal would cut costs in half for old reprocessing contracts and by one-third for new contracts.

According to the industry journal *Nuclear Fuel*: "Political sources said that if the federal legislation is passed into law on schedule, utilities will have the legal option of geological storage of spent fuel after a period of interim storage. Utilities would thus be free to cancel reprocessing under the 1989 contracts and pay penalties to Cogema and BNFL by mid-1994 or early 1995."

Further, the US is considering proposals to take German civil plutonium already separated by Cogema in France under perpetual safeguards. Informal approaches have been made to the US by German utilities. If such a plan was to go forward then, according to *Nuclear Fuel*, "Utilities whose plutonium would be covered in a bilateral agreement with the US could then cancel their reprocessing commitments with Cogema or BNFL."

Nor is BNFL's home market any more stable. Following the publication of its much-delayed annual report at the beginning of February, considerable doubt is mounting over the prospect of deals worth £19 billion being signed by the UK's two nuclear generators and the company.

The accounts showed that pre-tax operating profits have fallen by over half on last years figures to £76 million, with the dividend being paid to the government — BNFL's only shareholder — falling to £26 million. However, even the claimed level of profit cannot be justified by BNFL as their auditors, Ernst and Young, have assumed that the government will at least partially underwrite the contracts between BNFL, Scottish Nuclear and Nuclear Electric. No such decision has been made by government. Indeed, in October 1992 the Department of Trade and Industry (DTI) explicitly refused to underwrite the contracts. BNFL's annual report and accounts states: "The company regards such financial support in the form of underwriting to be a prerequisite to the completion of these contracts."

While the DTI admits that BNFL has once more asked that the contracts be underwritten, Nuclear Electric stresses that it is not assuming that the government would shoulder "any major extra underwriting."

■ Meanwhile, it has been confirmed that BNFL is actively engaged in research into a successor to Thorp.

"It is only natural for a company like ours to be looking well into the future", says BNFL.

"We are looking for Thorp to be operating for around 25 years — that is its planned life.

"If we have the orders and if the plant is still operating safely and economically, we would be happy to continue beyond that. But it may be sensible to use new technology." ❑

Vote veto

BRITISH Nuclear Fuels (BNFL) employees or their spouses on Copeland Borough Council should not be allowed to vote on matters relating to company applications, according to legal guidance requested by the Council.

Copeland is the local authority responsible for planning decisions relating to the Sellafield plant. As BNFL is by far the area's largest single employer, it is hardly surprising that 9 of Copeland's 53 councillors work at Sellafield.

If the Council decides to accept the advice from Steven Cockman QC, a specialist in local government law, it will remove 4 Sellafield workers from the 12-member planning and services committee when BNFL applications are being considered.

Under the Department of the Environment's (DoE) national code, councillors should normally declare an interest and not vote when they have a pecuniary or other direct interest. However, the DoE said it was up to councils how they interpreted this guidance. Should Copeland decide not to accept the advice, it would leave the Council's decisions relating to Sellafield open to legal action. ❑

Dounreay developments

RADIOACTIVE discharges from AEA Technology's Dounreay nuclear plant could increase by up to 1000% if the Scottish Office approves the company's latest application for new limits.

While the Authority has applied for increased limits for only 8 of the 26 main liquid and gas radioisotopes routinely discharged from the plant and has even requested lower limits for 10 isotopes, this hides the true story.

According to its submission to HM Industrial Pollution Inspectorate (HMIPI), the Authority wants permission to increase alpha discharges into the sea by over 900%, caesium-137 by 560% and plutonium by over 400%, while iodine emissions into the air could increase by nearly 1000% and plutonium by 625%.

While Dounreay does not deny that there will be massive increases in discharges, it insists that the levels will still remain small. According to the plant's head of safety, Ken Butler, any suggestion that there will be increased risk to the public is no more than "intellectual dishonesty designed to mislead and alarm the public ... The fact is that 1000% of a very small number is still a very small number."

The main reason for the massive increase in actual discharges is that the Department of Trade and Industry (DTI) has insisted that AEA reprocesses the spent fuel in the core of the Prototype Fast Reactor (PFR) at Dounreay by 1997. The PFR is due to close in April.

Two years ago AEA applied to the government for permission to extend the PFR reprocessing from three to nine years. The extension, it was argued, was necessary if management wanted to phase in commercial contracts from foreign customers to ensure that the plant had alternative work when the PFR work ran out.

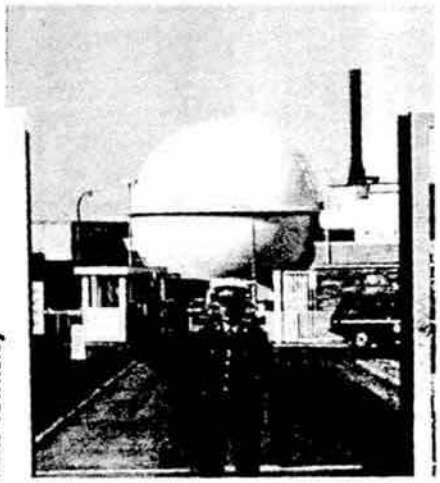
In September 1992, Highland Regional councillors were warned by AEA that without approval for its "good commercial and financial case" then 200 jobs would be at risk.

Despite that warning, a spokesman for AEA said at the end of January this year: "The proposal we made to the DTI was not accepted by them on the grounds that they were concerned — and they own the plant — that it was getting on in years and that if there was a serious breakdown it could be expensive to repair."

The company will now aim to reprocess the spent fuel as intended, hoping to complete it by the end of 1997 but it may "slip into 1998 or 1999. Once that is done we are at liberty to undertake commercial work as we can get it, which would help to offset decommissioning costs."

Since it began operating in 1959, the D1206 plant has reprocessed some 28.8 tonnes of spent fuel but will now see over 30 tonnes pass through in a much shorter time.

Any criticism of the new proposals as being the result of financial expediency has been rejected by Dounreay's head press officer, Nick Parsons: "Since we are talking about long-lived substances the point made ... about reprocessing in a hurry is quite irrelevant and ignorant."



Mike Townsley

However, the company's application to HMIPI clearly states: "A major contributor to waste arising is the reprocessing of PFR fuel ... The confirmation of the final shutdown of PFR has had, as one effect, an increase in the rate at which such reprocessing is required, by the DTI, to be completed. This acceleration ... results in an increase in the expected discharges needs ..."

Further AEA argues: "Reprocessing of PFR fuel will be conducted at a higher rate than hitherto partly because of the closure of the PFR and the requirement of the DTI to have the fuel reprocessed as quickly as possible on economic grounds."

The Authority continues: "Because the expected discharges have been calculated for relatively short-cooled fuel these are higher than values that would have been obtained for fuel cooled for periods more typical of past reprocessing regimes."

The new proposals have already led the Icelandic Environment Minister to write a formal letter of protest to the UK government about increased discharges into the North Sea. Other Nordic countries are expected to follow suit.

The UK is a signatory to the Paris Commission which seeks to minimise radioactive discharges to the sea. Last year the Commission agreed a policy stating that new or revised discharge authorisations for reprocessing plants must be subject to international scrutiny and consultation. A full environmental impact assessment is also required and justification given for the discharges to sea and air. Unsurprisingly the UK was the only country not to agree the new policy. ❑

Those wishing to obtain a copy of the AEA's application for new discharge limits should apply directly to: HM Industrial Pollution Inspectorate, 27 Perth Street, Edinburgh EH3 5RB, Scotland, UK. Tel: +44 (0)31 244 30 62; Fax: +44 (0)31 244 29 03.

Dounreay waste imports

DESPITE assurances made to the contrary, Dounreay's management is planning to import large quantities of radioactive waste for treatment at the plant.

The company wants to build a £5 million plant capable of destroying some 100 tonnes a year of contaminated solvents, produced from the laboratory manufacture of diagnostic medicines and ion exchange resins from nuclear power plants, by using the pioneering Silver 2+ technology.

A spokesperson for the plant said the electrochemical process would convert the waste to "water, carbon dioxide and a small amount of radioactive liquor."

The radioactivity in the waste from foreign customers would, after separation, be returned as intermediate level radioactive waste, according to the plant's operator AEA Technology, but waste from UK customers would be retained at the plant for disposal. The Authority declined to comment on the time-scale for returning foreign wastes.

Despite admitting that "all solvents are harmful by their nature" the Authority describes the waste as "innocuous" insisting that there is "no question of bringing toxic waste to Scotland."

The plans have been lodged with the Scottish Office which said: "We are considering requests from AEA Technology at Dounreay and are consulting with other government departments."

However, any such proposal is bound to be fiercely contested by Highland Regional Council which maintains a policy opposing any importation of radioactive waste into the region. The Region has supported the development of the Silver 2+ technology, but councillors had been led to believe that it would be deployed on a mobile rig or rigs and taken to the waste.

The company expects construction of the plant to take about three years: "It will be funded by potential customers from overseas paying money up front rather in the way BNFL built Thorp at Sellafield. While no contracts have been signed, we have indications from potential customers who would form the vast majority of business. What we are waiting for is permission from the Scottish Office to import this stuff." ❑

Quick fix in the East

THE US Export Import Bank has given preliminary approval for credit guarantees to complete the Temilin nuclear power station in the Czech Republic, despite the fact that the plant will not meet US nuclear standards.

At the end of February the proposal will be the subject of a Congressional hearing which could reject the plan to make 70 billion crowns available to Westinghouse for the completion of the plant which involves many of the worst features of the Soviet VVER 1000 reactors.

Cost estimates for completing the plant have already risen by one billion crowns in the last six months and observers fear that this is only the beginning of the rise. Westinghouse has no nuclear plant under construction, nor under order, in the US. The company has a long record of overspending: it has built 52 nuclear stations in the US, on average they were 420 per cent over budget and five years late. With no home market, Westinghouse must move east to survive.

The World Bank has already turned down requests for loans to complete the plant because, it says, it is not the least cost option for the region. Czechoslovakia has considerable untapped energy efficiency reserves, which if exploited would not only negate the need for Temelin but would allow closure of the polluting brown coal-fuelled stations in Northern Bohemia.

There is massive local opposition to the plant: of 64 towns and villages in the area, many filled with Temelin workers, 58 have asked the government not to complete the plant.

Temelin, if completed, would be a curious and untried hybrid of Soviet and US design. It will use components which are known to be faulty. The steam generators, for example, are of the same design as the VVER 1000, 36 out of 64 of which have prematurely failed. The plant is also to use computer software to control the primary safety system developed for the Sizewell B station in the UK. The software recently failed 48% of 50,000 checks run on it by Rolls-Royce.

Current demand for electricity within the Czech Republic is being met using existing plant, leaving enough spare capacity by western standards to account for any plant failure. However, the plant would allow the Republic to export power and hence generate valuable foreign currency.

■ Ignalina nuclear power station in Lithuania is to benefit from a £25 million grant from the European Bank for Reconstruction and Development (EBRD) to cover safety upgrading of the RBMK plant.

Lithuania has two 1,500MW RBMK (Chernobyl-type) reactors at Ignalina, producing approximately 2,500MW and accounting for some 90% of the country's centralised energy production, including electricity and district heating.

Since the collapse of the Soviet Union, western experts have identified a myriad of safety problems at the plant and have been arguing about just how much would need to be done to fix it. Some, however, most notably German environment minister Klaus Toepfer, have called for the immediate shutdown of the station.

This is the second grant issued by the Nuclear Safety account of the EBRD and the first for Chernobyl-type reactors. It is intended to supplement bilateral aid programmes. The project at the station will provide a wide range of equipment to improve safety levels, including material for fire protection, inspection equipment, tools for maintenance and a compact simulator for training.

According to the UK's energy minister, Tim Eggar, the EBRD loan is conditional on the site's oldest unit being subject to stringent re-licensing procedures, based on a safety assessment by independent experts and an in-depth study of future energy demand, in 1998.

But, an energy master plan produced by Sweden's Vattenfall AB and Finland's Imatran Voima Oy utilities, says: "it will never be feasible to phase out any of Ignalina's units before the end of their technical lifetime is reached." The plan's authors estimate that the plant will not cease operating until somewhere between 2005 and 2010, however, they say that when new capacity is needed it won't be nuclear.

■ Bulgaria has yet to produce detailed plans for phasing out the oldest VVER units at the Kozloduy nuclear power station, despite commitments to do so given to the EBRD.

If a plan is not forthcoming soon, Electricité de France (EdF) chair, Gilles Menage, has warned that the company will leave Kozloduy. EdF is the main utility contractor working on safety improvements at the station and has contributed considerable assistance from its own budget.

Bulgaria gave assurances that reactors 1 and 2 on the site would be closed down in the spring of 1997 in exchange for over 24 million ECU from the EBRD. The station has six reactors in all.

EBRD says it has issued requests for bids on about half of the supply contracts covered by the grant, but reports that although a couple of minor contracts have been awarded most remain to be decided and some have not yet attracted bidders.

A major stumbling block for western companies in bidding for the contracts is the question of liability for potential accidents involving equipment or services supplied by the west. All of the site's reactors are of the Soviet VVER-440/Model 230 design. A design which the International Atomic Energy Agency calculates runs a 25% risk of core meltdown over a five year period.

Until the liability question is resolved, Bank officials say the implementation of assistance is unlikely to go beyond mere studies. ❑

French fast reactor

SUPERPHENIX, the French fast breeder reactor, can be restarted from a "safety point of view" and under certain circumstances, DSIN, the French nuclear regulatory agency, has announced.

"Under no conditions should power production be a main goal of Superphenix," warned the agency's Director, Andre-Claude Lacoste. It is to be operated as a prototype — if it is re-licensed by the government — and shut down at the least appearance of a problem.

The agency has also said that its approval is conditional on the successful completion of backfits aimed at improving the 1,240MW plant's resistance to sodium fires.

The station was closed in 1990 when snowstorms destroyed part of its roof, and since then over £30 million has been spent on it. ❑

Japanese slow reactors

JAPAN'S nuclear utilities have decided to postpone plans to build a demonstration fast breeder reactor. Work is now not expected to begin until early in the next century, not the late 1990s as was planned.

While insisting that fast reactors would still be available for commercial exploitation by around 2030, the utilities have not yet found a site for the demonstration reactor. Indeed, they have not yet begun operating their prototype fast reactor, Monju, which is now long overdue. ❑

Improvements in the government's Home Energy Efficiency Scheme have been made as part of a package to compensate low-income households for the imposition of VAT on domestic power and fuel. But these changes, though welcome, do not go far enough, argues JENNY SAUNDERS, head of press and public relations with Neighbourhood Energy Action.

Energy efficiency and fuel poverty

THE additional £35 million which has been made available for the Home Energy Efficiency Scheme (HEES) for the next three years, as part of the Chancellor's Autumn Budget Statement, is a very welcome boost and will enable 400,000 households per year to receive the benefits of insulation.

Neighbourhood Energy Action (NEA) argued that it was vital that the package to compensate for the introduction of VAT on domestic fuel should include increased investment in energy efficiency in addition to increases in benefit payments, a point reinforced by the Select Committee on the Environment in its investigation into energy efficiency in buildings. The increases in benefits are small, only half of what was recommended by the Social Security Advisory Committee. The extra resources for HEES are, however, a more positive signal regarding the value of energy efficiency.

Eligibility for HEES will be extended from 1 April 1994 to all pensioner households and people receiving Disability Living Allowance. The "pensioners' lobby" was very active during the VAT campaign and was expected to win concessions. The downside is, of course, that it will still take twenty-five years to insulate the homes of the poorest households.

NEA intends to strengthen links with referral agencies who support lone parents and families with young children who are on low incomes. The abolition of the client contribution towards the HEES grant, introduced on 9 December 1993, will ensure that the poorest households can now afford to take up the grant.

HEES - the first two years

300,000 low-income households received HEES grants in the first two and a half years of the scheme, creating more than 1,830 full-time jobs for insulation installers and saving more than 250,000 tonnes of CO_2 per year. These figures are quoted in a report* from the Scheme's administering body, the Energy Action Grants Agency, covering the period from its establishment in October 1990 to the end of its initial contract in March 1993.

Local authority tenants were most likely to claim a grant (72%), followed by owner-occupiers (18%), housing association tenants (6%) and private tenants (4%). Terraced houses were the most common type of property to be treated (38%) followed by flats (26%) and semi-detached houses (also 26%).

Most properties treated were built between 1930 and 1965 (58%), with a further 18% built between 1966 and 1976. Regionally, take-up of grants was highest in the West Midlands, closely followed by the North West, the East Midlands and Scotland.

Levels of energy advice provision are also rising, up from 48% of jobs in the first year to 63% in the second.

End of client contribution

The combined efforts of NEA, 107 MPs, numerous voluntary sector organisations, the fuel utilities and consumer bodies succeeded in persuading the Department of the Environment to abolish the client contribution element of the Home Energy Efficiency Scheme.

Answering a parliamentary Question from Oliver Heald, Conservative MP for Hertfordshire North, the then environment minister Tim Yeo told the House on October 26 that "to meet concerns that this contribution may deter some people from applying for a grant to have their homes insulated, I will shortly be laying before Parliament proposals to amend the regulations governing HEES which would remove the requirement for a client contribution."

The HEES Regulations are amended by a form of delegated legislation called a Statutory Instrument which empowers the appropriate Secretary of State to introduce changes to the law. In this case SI 2799 was laid on November 18 and came into force on December 9.

In response to this change, the maximum grant levels were simply increased by the amount of the client contribution. Maximum grants for draughtproofing are now £128.50, for loft insulation £198.79 and for a combined job, £305.00. Despite this hard-won concession, at the end of a long campaign, both NEA and the Energy Action Grants Agency (EAGA) are urging that hardship funds be continued, both to pay for work which costs more than the maximum grant and to benefit those who narrowly fail to qualify for grants.

The decision was the culmination of a campaign co-ordinated by NEA to convince the government that what the Department of the Environment referred to as a "small contribution" was no such thing for people on means tested benefits. NEA's view had always been that the £16 which could be required of the client was a serious disincentive to the poorest households.

Apart from the 107 MPs who signed a House of Commons motion asking for the client contribution to go, NEA's campaign was supported by Friends of the Earth, Age Concern, Help the Aged, Care & Repair, the Institution of Environmental Health Officers, Child Poverty Action Group, the Gas Consumers Council and many others.

Hardship funds

NEA has received a number of queries about the continuing need for HEES hardship funds and their future use following the abolition of the client contribution.

NEA cannot stress too strongly the continuing importance of hardship funds.

The ending of the client contribution will undoubtedly remove a major barrier to accessing HEES for thousands of low-income households. However, NEA is concerned that there remain many others who will continue to be effectively denied access to HEES due to their inability to pay grant excess, or because they fall outside the HEES eligibility criteria. As those working in the fuel poverty field are only too well aware, some of those in greatest need of HEES measures will not be in receipt of a HEES qualifying benefit.

Many HEES installers have already put a great deal of effort into establishing hardship funds through local authorities, housing associations, local fuel companies or private donations.

Manweb (Merseyside and North Wales electricity company) generously provided £1,000 for HEES hardship cases in each of the ten Network Installer areas in the Manweb region. During the past nine months over 700 clients have benefited from these hardship funds including clients needing help with grant excess and special needs cases who are not HEES eligible. Manweb is keen that hardship cases in the region continue to receive help and is currently discussing possibilities with NEA.

Neighbourhood Energy Action hopes that local authorities and housing associations who have been funding the basic client contribution will acknowledge the need to continue providing hardship funds for grant excess and for those who are ineligible for HEES but who nevertheless are on a low income. It is important for HEES providers to stress to hardship fund contributors that if existing budget provision does not continue to be used for these purposes it may be lost from future budgets.

The unexpected decision to convert HEES to an exclusively Network Installer system will also be welcomed by those who know how the grant regime works. Ending the procedure whereby Listed Contractors had to get permission from EAGA before work could start will lead to a faster, more efficient service for HEES clients. Listed Contractors will be phased out from the end of June this year, when existing arrangements with EAGA come to an end. Bids will be invited for new Network Installer contracts, although it will be left to the judgement of EAGA to determine how many Network Installers will operate in each area.

Inadequate compensation

When Norman Lamont announced in his March Budget Statement that he intended to end zero-rating for domestic fuel there was a great deal of scepticism about the government's ability to devise an acceptable compensation package for low-income households. There was even doubt that this was its intention.

Subsequently, in response to the alarm and anger that the proposed tax caused, the government was compelled to make reassuring noises about how it would safeguard the interests of poorer people.

"We have made it very clear that while we regard this measure as necessary on both fiscal and environmental grounds, it is not our intention that poorer people should suffer."

(Then Chancellor of the Exchequer, Norman Lamont, April 1993.)

	Weekly compensation	VAT on weekly fuel expenditure
Pensioner couple		
1994	£0.70	£1.06
1995	£1.40	£2.37
Couple with two children under 11		
1994	£0.45	£1.23
1995	£1.00	£2.74

Average effects of VAT compensation on Income Support recipients

In addition to this assurance from the Treasury there was confirmation of the government's good faith from other sources.

"The most important thing for the House to bear in mind is that both my Right Honourable Friend the Prime Minister and my Right Honourable Friend the Chancellor have undertaken that the poorer people in our society will be protected from the impact of the increases ... I reiterate the commitment ... that the extra help will be given to those who need it most."

(Social Security Minister, Nicholas Scott, April 26, 1993.)

Compensation package

The new Chancellor, Kenneth Clarke, ended speculation on the compensation package with the Budget announcement in November which included provision not only for uprating means tested benefits, but also provided assistance to all pensioners and disabled people.

Reaction to the announcement of assistance which included middle and upper income households ranged from seeing this action as caring and responsible, to seeing it as pragmatic and political. Whatever view people took, it was clear that money available for compensation was not targeted on people in most need and that help available to them would fall far short of their needs.

In the run-up to the November Budget there was considerable discussion on how the compensation would be arrived at. In its analysis of Budget options the Institute for Fiscal Studies outlined the failings of the Retail Price Index (RPI) in this context:[1]

The RPI excludes spending patterns of the very wealthy and poor households. The result of this is to exclude pensioners with high fuel consumption, distorting the significance of fuel in the RPI.

Even if all households were included for RPI purposes it would not reflect the fuel consumption of the benefit-receiving population since their expenditure on this commodity is disproportionately high.

The RPI itself is 'undemocratic' in that the greater the overall household expenditure the greater the weight attached to its spending pattern. This tends to further depress the importance of fuel in the RPI.

The relevance of all this is that when the government came to fix the level of compensation required it looked at the effect of VAT at 8% on fuel for the average household calculated it as 0.4% of expenditure and applied it to poor households for whom it was not appropriate.

This is illustrated by the two examples of households in receipt of Income Support shown in the Table above. And as these only relate to average expenditure in claimant groups, in many millions of cases the loss will be considerably greater.

The Department of Social Security estimates that help for VAT on fuel will cost more than £1.5 billion over the next three years and that, in all, 15 million people will receive some form of assistance. In addition, from November 1994 Severe Weather Payments would increase from £6.00 to £7.00 rising to £7.50 in November 1995. ❑

Reference

1. "VAT on domestic energy", Institute for Fiscal Studies, 1993.

*** "A report on the Home Energy Efficiency Scheme October 1990–March 1993" is available from EAGA, Eldon Court, Eldon Square, Newcastle upon Tyne NE1 7HA.**

With the pending review of nuclear power, HUGH RICHARDS, of the Welsh Anti-Nuclear Alliance, looks at the issues involved in decommissioning and the industry's attempts to put off the problem for as long as possible.

This year, next year, sometime, never

THE nuclear industry is at a watershed. It believes that a case can be made to government for an end to the moratorium on new nuclear power stations.

Nuclear Electric takes the view that to attract private investment two things are required: the writing off of inherited liabilities, ie their transfer to the taxpayer; and the continuation of a guaranteed share of the electricity market. While the era of decline for nuclear power is adding a growing number of defunct reactors to the catalogue of neglected and mismanaged radioactive waste, success depends upon the industry being allowed to jettison the accumulated legacy of waste and reactors.

Financial pressures have forced the industry to shift its ground considerably on the extent and timing of decommissioning (see box on p 12). Economics and nuclear safety make strange bedfellows, making the industry's increasingly money-driven judgements on early, delayed or indeed zero decommissioning highly suspect.

Fifteen years ago the Central Electricity Generating Board adopted a reference strategy for decommissioning which involved delaying final clearance of the reactors for 100 years. In evidence to the Commons Select Committee on Energy in 1986 the Board advised that it would be possible to decommission a Magnox station completely within 15 years, but restated its preference for a 100 year delay.

Nuclear Electric (NE) — the CEGB's atomic daughter created when the commercial aspects of the electricity supply industry were privatised — would prefer to defuel and guard redundant nuclear reactors for 35 years and then build a concrete containment to last for 100 years, after which they say the reactors could be dismantled.

However, NE argues that public opposition to deep repositories for low and intermediate-level waste, and to the transport of waste, combined with the availability of existing nuclear power sites which could be continuously redeveloped, make entombment (mounding over the reactors) a possible way out.

Three civil Magnox stations have shut down over the last few year: Hunterston (Cunninghame), Berkeley (Gloucestershire), and Trawsfynydd (Gwynedd). The United Kingdom Atomic Energy Authority's SGHWR at Winfrith has shut and the Prototype Fast Reactor at Dounreay will close in April. In addition there are a number of redundant nuclear submarines with pressurised water reactors berthed at Devonport and Rosyth.

The task before us is to make the nuclear industry face up to its responsibilities. To do this we have to be clear what we want. We must create a climate of opinion that leaves the nuclear industry with no escape route.

In the coming months we must ensure that the financial implications of decommissioning and of radioactive waste management are borne in full, not by the taxpayer but by the nuclear industry and its would-be investors.

The Cardiff meeting

Anti-nuclear campaigners from a wide area met in Cardiff in December to address the subject of closed nuclear reactors and the approach that should be taken to decommissioning. The meeting upheld the previous (1987) no-dumping policy.

However, it was recognised that in the absence of dry stores at each closed station, rapid defuelling after closure is being undertaken. At Berkeley it was completed in an 18-month period. At Devonport, deteriorating PWRs aboard nuclear submarines in a highly populated area present an unacceptable hazard, and will have to be moved to a safe land-based store.

The Cardiff meeting established two significant additions to the 1987 no-dumping policy:

(a) Public and local government involvement in the decision-making process about the timing and extent of decommissioning.

Because it is the local area that will bear the risks, the agreement of the local authority to the extent and timing of decommissioning should be sought and gained. This should be done in the light of comparative risk assessments of alternative decommissioning timetables, as well as the more usual planning matters such as aesthetics and the local economy.

(b) No 'entombment' because that means relinquishing control over the contents of the reactors.

Any decision to clear the site for unrestricted use would clearly have to wait until a suitable storage facility or repository had been constructed. There would be hazards to our generation from early dismantlement. We should demand adherence to the best technologies and working practices in order to minimise the hazards.

Early decommissioning would require 'interim on-site storage' of packaged nuclear waste. It has no bearing on the timing and location of a Nirex dump or surface storage facility.

The 1987 No-Dumping Policy

1. There should be No Dumping or Disposal of waste.

2. They should seek responsible and acceptable solutions to storage.

3. At present, nuclear waste, including spent fuel, should be stored in a fail-safe condition above ground, on site at the nuclear facilities where it is produced.

4. It should be constantly monitored and retrieved if necessary and re-packaged.

5. Production of waste by nuclear power generation and reprocessing should cease.

There was general agreement with the view that, because of far-reaching inter-generational conflicts, decisions about decommissioning are essentially moral and political, rather than technical and scientific.

However, none of these views represent a final consensus. Many people, particularly from Scotland, found it impossible to attend the Cardiff meeting. A follow-up meeting has been arranged, to be held in Manchester on 9 April.*

Whatever the Manchester meeting decides, the wider debate about whether the dismantlement of nuclear reactors should be left to future generations is bound to continue.

Arguments for delay

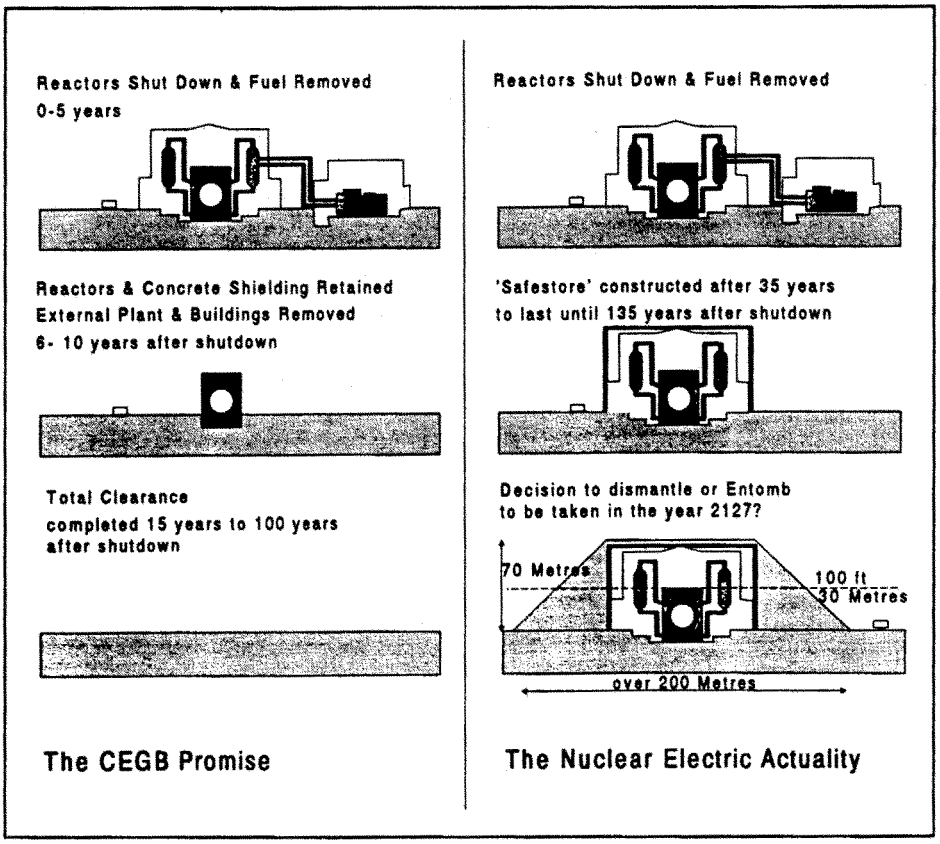
There are good arguments both for and against early decommissioning. In the current climate, compulsory competitive tendering could lead decommissioning contractors to discharge radioactivity up to and beyond a station's authorised limit.

In the absence of a Nirex facility there is no place to put decommsioning wastes, and early dismantlement may increase the already considerable pressure for a final resting place to be found irrespective of safety. In any case, 'interim' storage facilities would have to be provided on-site.

Fears have been expressed that early decommissioning of Magnox and Advanced Gas Cooled Reactors (AGRs) may create radiological hazards for workers and the surrounding communities. Nuclear Electric has claimed that manual decommissioning in the most active parts of a Magnox reactor, (impossible from 0 to 70 years after shut-down), is not only possible after 135 years but up to 30 hours a week would be permissible.

That is contested by John Large who has stated that after 135 years the time limit per week per worker in the most active zones would have risen from 1 minute to 5 minutes. In other words the optimism of Nuclear Electric that manual decommissioning is possible in 135 years is suspect.

Some say that we should not be sentimental about future generations and should do only that which is most convenient to our own generation. This is in effect the position of the nuclear industry. There are practical problems using remote-controlled techniques during decommissioning, but it should not be assumed that our great grand children will have any robots let alone 'better robots'.



Postponing final removal of the reactors for 135 years will burden future generations with a problem that our generation created.

The problem with the abrogation of responsibility is that it would be ethically acceptable only if it was certain that the danger would decrease over time.

This notion, based on the half-life of radioisotopes, is unprovable and is likely to be wrong because of the physical deterioration of the structure and the contaminated materials.

Delaying decommissioning for 135 years will disperse the workforce that actually knows the station, create local unemployment, and permit the physical deterioration of reactor internals.

Entombment would expose most British reactors to long-term coastal erosion.

Remote-controlled dismantling is regarded by some American experts as being unavoidable in the most radioactive parts of a reactor for at least the first 350 years. If reactors will always have to be dismantled at least partly by remote control, then our generation should undertake the work.

Given that the radioactive detritus of the nuclear power industry will not disappear, we are bound to bequeath it to future generations in one form or another. The choice is whether we leave it in the form of crumbling concrete biological shields, corroding steelwork and disintegrating graphite, or whether we leave it packaged in a form where it is already isolated from the biosphere.

Conclusion

Walking away from a nuclear reactor after defuelling is certainly not a responsible and acceptable solution. It does not fulfil the criteria of on-site above ground storage where waste is both monitorable and retrievable. It is exactly what the nuclear industry wants, because the delay allows the sum set aside for decommissioning to be greatly reduced, thus increasing the chance of attracting new investment.

Greenpeace and Friends of the Earth want the establishment of a decommissioning fund. Such a fund would be held outside the public sector under the control of Trustees. It would be sufficient to provide for decommissioning in the minimum possible time from plant closure. Such a fund together with the principles of site by site self-determination and opposition to entombment, established at Cardiff, give us a clear and positive way forward.

The government's 'Review of the prospects for nuclear power' is imminent. We are now ready to put the physical and financial shambles of the nuclear industry's waste and decommissioning performance right where it belongs – centre stage, under a spotlight. ❑

*** If your organisation wishes to participate in the Manchester meeting please contact Hugh Richards on 0982 570362.**

From neglect to cynicism: the decommissioning saga

1950s
Commercial Magnox reactors designed and built without any thought being given to decommissioning.

1977
Desk studies of decommissioning a commercial Magnox station started.

1979
The requirement to plan for decommissioning at the design stage was established in April 1979.[1]

1979
The Emergence of the Three Stage Approach

By September 1979 three stages of decommissioning had been identified[2]:

Stage I. Shut down, remove fuel, remove coolant, make safe. Maintain under surveillance.

Stage II. Reduce structure to smallest practicable size, without penetrating into parts which have high levels of induced radioactivity, ensure structural integrity of both primary containment and biological shield. Maintain under surveillance.

Stage III. The final clearance of reactors and other plant and waste to enable the reuse of the land.

Stages I and II, followed by a delay of up to 100 years gradually became known by the CEGB as the 'reference strategy' for decommissioning.

1984
At the Sizewell B Public Inquiry, the CEGB stated that:

"I think we accept it as a broad commitment to do our best to clear the site for unconditional use when we have given up the site generally for generation purposes."[3]

1984
A CEGB leaflet on decommissioning explained that:

"In the exceptional case of a site not being suitable for redevelopment with a further power station, it will still remain the responsibility of the CEGB. This will ensure that it is properly looked after and is no danger to the public until such time as the reactors have been dismantled and removed and radioactivity has been reduced to safe levels so that freedom of access can be allowed."[4]

1984
The option of 'entombment' as an appropriate method of final decommissioning of nuclear reactors was discussed at the Sizewell B Public Inquiry. The CEGB was emphatic:

"I think it is fair to say that the Board reject both the term and its implications ... we believe it to be an unacceptable solution to decommissioning."[5]

1986
The Inquiry Inspector, Sir Frank Layfield summed up the position thus:

"The CEGB said that the alternative of encasing the reactor building in concrete and leaving it on site permanently was technically doubtful and environmentally undesirable"[6]

1988
United Kingdom Nirex Ltd, the organisation that has been given responsibility for researching, constructing and operating a single deep facility for the disposal of solid low and intermediate-level radioactive wastes, points out that:

"Current nuclear facility sites have been chosen on grounds other than suitable geology and hydrogeology to contain radioactive materials."[7]

1989
The government's attempt to privatise the nuclear industry foundered largely on the independent scrutiny of decommissioning costs.

1990
The Hinkley Point C Public Inquiry inspector, Michael Barnes reported:

"... a repository is a location for the permanent deposit of waste. Plainly the Hinkley Point site is not used and is not intended to be used as a repository in this sense."[8]

1990
Shortly after its formation Nuclear Electric was reported as proposing:

"a radical change in nuclear decommissioning policy that would save it billions of pounds."[9]

Fred Passant, then as now Nuclear Electric's Manager of Waste and Decommissioning, even went as far as suggesting the possibility of "mounding over the plant on site after defuelling ... with little or no dismantling."

John Collier, Chairman of Nuclear Electric confirmed the motivation behind the change of strategy saying that the:

"burial option could reduce the crippling liabilities that the company had inherited."[10]

1991
Passant addressed the statement made by the CEGB at the Sizewell Inquiry that 'entombment' was technically doubtful and environmentally undesirable.

"At the time of the Sizewell Inquiry detailed studies had not been conducted on the in-situ decommissioning option. Significant work has now been done ... and this demonstrates that it is technically and environmentally acceptable."[11]

Nuclear Electric's preferred decommissioning strategy has been described by the late Andrew Holmes, founding editor of the influential Financial Times Business Information newsletter *Power in Europe* in scathing terms:

"As abrogations of responsibility go, this is on the grand scale."[12]

1991
Sir John Hill, president of the British Nuclear Forum has stated:

"If I can give a personal comment it is that this approach (entombment) is what will actually be done in the years to come."[13]

1992
Nuclear Electric's decision analysis used to evaluate delayed dismantling or entombment grouped the relevant factors into three groups: cost, technical, and environmental/safety; in that order. The option that gave the biggest cost saving came out on top.

The favoured strategy is to defuel, and 35 years after shut-down to build a concrete containment to protect the building from weathering, and keep the public out for 100 years. This will leave the final decision as to dismantle or to entomb for 135 years.

Entombment, or what Passant euphemistically calls 'in-situ decommissioning' did not score higher than dismantling after 135 years because:

"... of the uncertainty of being able to make the detailed safety case at this time. However, if the safety case can be made and if it is acceptable to the environmental safety and planning authorities on wider grounds, this option becomes by far the most attractive one."[14]

References:

(1) "Safety Assessment Principles for Nuclear Power Reactors", April 1979, Nuclear Installations Inspectorate, as quoted at Hinkley Point C Inquiry, Day 100, page 18G. J Hannaford HSE(NII)3 para 8.6.

(2) A Review of Cmnd 884 "The Control of Radioactive Wastes" Department of Environment, September 1979, Page 104, Para 6.23.

(3) Sizewell B Public Inquiry, Transcript of Day 202, Wednesday 28 March 1984, Page 21G, Mr A R Gregory.

(4) Decommissioning of CEGB Nuclear Power Stations, CEGB 1984.

(5) Sizewell B Public Inquiry, Transcript of Day 273, Friday 12 October 1984, Page 18E.

(6) Sizewell B Public Inquiry, Report by Sir Frank Layfield (1986) Para 43.10

(7) "Indefinite Storage — The Unacceptable Option" UK Nirex Ltd, January 1988

(8) The Hinkley Point C Public Inquiries, A Report by Michael Barnes QC (1990) Page 1419

(9) "Nuclear Stations Might be Entombed", T Wilkie, The Independent, 6 July 1990.

(10) "Landscaping Plan for Obsolete Nuclear Sites" N Hawkes, The Times, August 15 1990.

(11) Letter from F H Passant, Nuclear Electric plc, to the National Steering Committee of the Nuclear Free Zones authorities, dated 11 October 1991.

(12) "Take it away, kids!", Andrew Holmes, Energy Economist, July 1991, p17.

(13) "Summing up of Nuclear Forum 91", Sir John Hill, Nuclear Forum 91, 24-26 June 1991, p237.

(14) "Gas cooled Reactor Decommissioning — Choosing Nuclear Electric's Strategy" F H Passant, Nuclear Electric PLC, February 1992, Page 5.

The modest success of wind power in breaking into the electricity generation market, thanks to the Non Fossil Fuel Obligation in England and Wales, has given rise to some vocal opposition. MIKE HARPER, director of the British Wind Energy Association, puts the case for the defence.

Wind energy still blowing strong

WIND energy has become something of a hot potato recently, with the anti-wind energy groups generating lots of media coverage. Is it a case of a national uprising against wind energy or a storm in a teacup?

Wind energy in the UK has arrived, though not yet properly in Scotland. The windfarms established in England and Wales as a result of the first two Renewables Orders are capable of offsetting the emissions of some 380 thousand tonnes of carbon dioxide. There are now 29 completed projects and 2 under construction. Nineteen of the completed projects and both of those under construction are developments comprising more than 3 wind turbines and can be classified as 'windfarms'. A Renewables Order will be introduced for the first time in Scotland later this year.

Wind energy is without doubt a controversial issue. However, the controversy to date has largely revolved around misconceptions and mis-information distributed by groups aiming to stifle wind energy development completely. The main arguments cited against wind energy relate to visual intrusion, noise intrusion, the effects on birds, the cost of wind energy and contribution to electricity supply. On each count the evidence supports further development of wind energy.

Visual and noise intrusion

Though visual intrusion is highly subjective, the public attitude studies which have been conducted strongly suggest that people living in the countryside believe wind turbines can be accommodated within the landscape. For example, a study, sponsored by the Energy Technology Support Unit (ETSU), of attitudes of people living around the wind farm at Delabole in Cornwall concluded: "The results show, decisively, that any change of attitude from 1990 to 1992 [ie before and after construction] is toward thinking that wind power is better."[1]

The crux of the cost argument against wind energy is that since it currently receives a 'subsidy' it must be prohibitively expensive (a figure of 11p/kWh is used to support this position).

Firstly, this is a very short-sighted view of how progress is achieved. All developements must involve some initial support in the form of research and development or 'market stimulation'. There is nothing insidious in this if it is explicitly recognised that the support is to establish a desirable industry which otherwise would not be able to develop.

Secondly, the oft quoted figure of 11p/kWh for wind energy is related purely to the very short length of contracts provided by the Non-Fossil Fuel Obligation — the same costs would exist for gas-fired power stations if their contracts were for 5 years and not 15. Those wind energy schemes which are receiving 11p/kWh will continue to operate for a further 10 to 15 years after 1998 (when current NFFO contracts end) and will provide some of the cheapest electricity in the country since the fuel is free and the operation and maintenance costs are very low.

Views before & after construction[1]

	Before	After
Problems with visual intrusion	56%	28%
Problems with noise	40%	10%
Dissaprove of wind energy in general	28%	4%

Thirdly, the electricity market is presently structured so that fossil fuel plants and nuclear power are heavily subsidised in that they do not directly pay for the full consequences of their operation in terms of general atmospheric pollution, contribution to the greenhouse effect and the potential long-term liabilities of using nuclear power.

In its recent paper on sustainable development, the government said that questions over the proportion of energy produced from different fuel sources "should be resolved through the operation of the market, guided by price signals which take proper account of the different costs and benefits."[2] When new wind energy projects are assessed on similar financial criteria they are directly competitive with all conventional sources of generating electricity and are cheaper than most sources when the full environmental costs are taken into account.

A popular misconception is that since the wind does not blow all the time, coal fired stations have to be kept running to 'take up the slack when the wind falters'. In fact, the electricity network is used to dealing with variation in both load and supply. Technical studies have shown that the additional variations due to wind energy meeting between 10 and 20% of the UK's electricity demand would be small and would not cause any problems in operating the electricity system.[3] This means that every unit generated by wind energy which is fed into the grid can be used to displace electricity generated from conventional power stations.

The effect on birds

Studies have consistently shown that, provided migration routes are avoided, the effects of wind turbines on birds will not be significant. Mean casualty numbers per kilometre windfarm compare favourably with the number of birds killed by traffic per kilometre of road. Two wrongs do not make a right, but the debate should be kept in perspective. In the same way, it is wholly misleading to quote examples of windfarms overseas which have been sited on migration routes as somehow indicative of what could happen in the UK. Developments in the UK are specifically sited to avoid migration routes and thus to avoid this problem.

Though the vast majority of the population support wind energy development, some do not. This is an inevitable consequence of the introduction of change into society. The wind industry should therefore neither abuse the support of the majority either at a national or local level, nor should it be intimidated into abandoning wind energy by the clamour of a small minority. ❑

References

1. "Attitudes towards wind power — a survey of opinion in Cornwall and Devon", ETSU/W/13/00354/038/REP. HMSO, 1993.

2. Paragraph 66, "Sustainable development: the UK strategy", HMSO, 1994.

3. "Wind energy penetration study in the case of the UK", CEC, 1992.

Countries sending civil spent nuclear fuel for reprocesssing to Thorp for reprocessing may be contributing to Britain's nuclear weapons programme. PETE ROCHE, a political campaigner with Greenpeace UK, summarises a recent report which examines the link between civil and military plutonium.

Sellafield and the bomb

THE Nuclear Non-Proliferation Treaty (NPT) has often been criticised for discriminating in favour of the official nuclear weapons states (NWSs). This criticism has focused on the maintenance and build-up of nuclear weapons by the NWSs and their failure to halt nuclear testing.

However, a less reported but equally important discrimination, deliberately incorporated into the NPT, is the right of NWSs to use civilian nuclear materials, including plutonium, in their weapons programmes. Evidence has slowly emerged over the past few years that the UK has diverted nuclear material, of UK and foreign origin, from civil to military programmes.

Large-scale plutonium separation facilities are due to open in the UK, France and Japan before the end of the century, capable of separating, by the year 2010, more plutonium than exists within the global nuclear weapons arsenal. The most immediate threat is the Thermal Oxide Reprocessing Plant (Thorp). Unless its foreign customers have made special arrangements, the UK could use their plutonium in its nuclear weapons

The history

The Magnox reactor reprocessing plant, B205, which opened at Sellafield in 1964, handles both military and civil spent fuel. Magnox reactors are fuelled with natural uranium, and can yield significant quantities of the plutonium-239 isotope — ideal for weapons purposes.

The UK sold two Magnox reactors, one to Japan in 1958 (Tokai1 — 159 MWe); the other to Italy, (Latina — 153 MWe). Though the Latina plant is now closed, the Tokai1 plant is expected to operate throughout the 1990s. Their spent fuel has been routinely shipped to Sellafield for storage and reprocessing.

The Central Electricity Generating Board (CEGB) which operated civil Magnox reactors claimed at the Sizewell B Inquiry that: "No plutonium produced in CEGB reactors has been applied to weapons use either in the UK or elsewhere."

Yet, the first Chair of the CEGB and architect of the Sellafield complex, Lord Hinton, commented angrily at the same inquiry: "I am absolutely certain that statement is incorrect ... I don't know whether they should get permission for a PWR at Sizewell or not but what is important is they should not tell bloody lies in their evidence."

In 1986, Lord Marshall, the then Chair of the CEGB, admitted that plutonium from civil reactors had "... gone into the defence stockpile in the early years of Magnox reprocessing, up to 1969." In addition, it has been confirmed that about 7,000kg of UK plutonium, perhaps as much as 2,900 kg of it from civil reactors, has been sent to the United States under the Anglo-American barter arrangement dating from 1958/59, which allowed the US atomic authorities to put it to military purposes.

The public impression given by the nuclear industry, UK government and safeguards agencies is that civil nuclear materials are safeguarded against military use. However, in 1983, the Department of Energy explained this is not the purpose of safeguards, rather it is "to encourage the widespread adherence to the NPT by demonstrating that non-nuclear weapons states would not be placed at a commercial disadvantage from the application of safeguards".

It added that the 1978 UK-Euratom-IAEA tripartite safeguards agreement "specifically provides under clause 14, for the withdrawal of nuclear material from the scope of the agreement for national security reasons. If such withdrawals are made, the safeguards authorities are notified", but "withdrawal from safeguards are not permitted if the material is subjected to civil end-use restrictions under agreements with supplier counties". This would appear to protect imported spent fuel at Sellafield from military use: it doesn't.

This year Parliament was told that on 571 occasions civil nuclear material had been withdrawn from safeguards. The minister responsible, Tim Eggar, said that "The majority of these involved either the temporary withdrawal of material transferred to MoD [Ministry of Defence] sites for processing before being returned to safeguards at civil sites, or, in the case of permanent transfers to MoD sites, the withdrawal from safeguards of material such as depleted uranium for source shielding or small amounts of other nuclear materials for R&D or analytical purposes."

The minister failed to account for all the withdrawals — the fact is that the UK military is entirely permitted to put this material to weapons use.

France, as a NWS, may also have exercised its right under the NPT to withdraw civilian nuclear material from safeguards for military purposes. It was reported in late 1992 that France may already have utilised Japanese plutonium in its weapons programme.

Safeguards

In October 1984 BNFL reluctantly revealed that from 1 January 1973, when the UK joined the European Community, including the European Atomic Energy Community (EURATOM), it had excluded safeguards inspectors from the most sensitive areas of Sellafield, on the grounds of national security. This remains the practice today.

BNFL also admitted that for economic and operational reasons it had routinely co-processed safeguarded (civil) and non-safeguarded (military) plutonium at the B205 Magnox reprocessing line, regardless of the reactor of origin of the spent fuel. The important management criterion for BNFL was the burn-up rate of the fuel, not the origin or safeguard status of the spent fuel. In 1986 Parliament was told that: "The products of co-processing were allocated by dividing the total pro-rata to the quantities of uranium and plutonium in the incoming safeguarded and unsafeguarded fuel."

In other words, BNFL would return to Japan (and Italy) an agreed weight of plutonium and uranium (and fission products), although of course the material returned to Japan would not necessarily be what was within the original spent fuel elements.

On 4 June 1986 the UK Minister for Energy, Peter Walker, indicated that from January 1987 full inspection access would be possible and that "the co-processing of civil and non-civil

material will phase out during 1986 and thereafter separate civil and non-civil reprocessing operations will be carried out sequentially rather than simultaneously."

Despite this announcement, questions in the UK and European Parliaments indicate that the announcement was misleading and many questions about the application of safeguards remain unanswered. It is not certain yet that the requirements of the relevant European Commission directive on application of safeguards have been met in full, although the UK government persists in giving the impression they have.

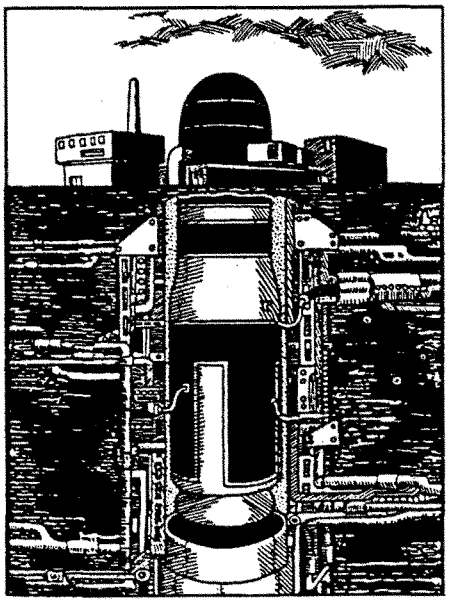
Unless customers specify otherwise, BNFL is entitled to allocate pro-rata the weight of plutonium to customers after co-processing, but not necessarily the quality of plutonium. This enables BNFL to swap isotopes of plutonium, retaining the plutonium with isotopic composition of high purity and substituting lower purity plutonium. In this way, even if customer countries are returned the expected weight of plutonium, BNFL could gain by retaining all of the most valuable grade of material.

Japan, which publicly commits itself to not assisting nuclear weapons development, appears to have failed to object to the BNFL practice of co-processing. Such a failure by Japan (and Italy) would permit the UK to gain militarily from their civil nuclear programmes. If so, this is clearly a serious breach of non-proliferation commitments by all the countries.

Even before Japan shipped back its first consignment of Magnox fuel from the Tokai1 plant to Sellafield in September 1969, the UK Parliament had been told by the then Prime Minister Harold MacMillan, in July 1958, that "the UK's agreements with Italy and Japan provide for consultation between the contracting parties to determine in what respects and to what extent they desire to arrange safeguards in the agreements to be administered by an appropriate international agency — the agreements provide for consultation as to what would be the most appropriate way of policing these agreements."

Furthermore, Japan actually received large quantities of plutonium before becoming a party to the NPT. By the time Japan joined the NPT in 1976 it had received 260kg of fissile plutonium from the UK — in 8 air consignments and 1 sea shipment between 1970-75. All the plutonium was said to have originated in Japanese reactors, and was hence being returned, not sold.

Details have also emerged of a special consignment of plutonium produced in the UK Wylfa Magnox, ordered by Japan for apparent use in its breeder research programme. This plutonium was shipped in the early 1970s, before Japan joined the NPT, and as it originated in a UK reactor comprised a sale, not a return of Japanese owned plutonium. It is not known what the isotopic concentration of this material was, neither is it known why it was necessary for the UK to operate a reactor specifically for Japan when that country had already sent plutonium to the UK for reprocessing. One possible explanation is that the plutonium sent to the UK from the early operations of Tokai1 was of such high quality, in terms of plutonium-239 content, that the UK military used it in its nuclear programme. Japan, requiring similar quality plutonium for fast reactor fuel fabrication, requested a shipment, which at the time could only be met by operating a UK reactor. There are many



questions that still need to be answered. The Japanese government, committed to more openness in plutonium matters, has an opportunity to allay fears that Japan has been complicit in helping nuclear weapons proliferation.

Implications for customers

The UK government asserts that "any potential proliferation risks associated with the operation of Thorp are satisfactorily met by the existing safeguards arrangements to prevent theft, sabotage and diversion." Leaving aside the inability of safeguards, even if applied comprehensively, to account for large quantities of plutonium (the so-called MUF - material unaccounted for), this statement hardly addresses the question of legalised withdrawal as permitted under the NPT.

There remains the question of whether safeguards as applied to Thorp, a designated civil plant, would permit withdrawal of plutonium from non-UK stocks. The UK government clearly implies that the withdrawal clause 14 of the 1978 tripartite safeguards treaty will not apply. However, the UK has indicated no intention to renounce its legitimate right under the NPT to withdraw civil material from safeguards. There will not be individual campaigns of one country's spent fuel (eg German, Japanese and UK fuel could all be run through the facility at the same time), so, if the UK, for whatever reason, wishes to withdraw materials from safeguards, the client will not be able to guarantee that material originating in its reactors is not used for non-peaceful purposes.

Conclusion

Clearly the international trade in plutonium is inseparable from nuclear weapons proliferation. The case of the UK weapons programme feeding off civil plutonium reprocessing is only further confirmation of this relationship. By using its rights as a nuclear weapon party to the NPT and other so-called non-proliferation arrangements, the UK has been able on 571 occasions to withdraw material from civilian safeguards. There is evidence to suggest that France has operated similarly. In both countries Japan has been a complicit partner in helping their military programmes. With the prospect of Thorp opening and an additional plant in France before long, the implications are ominous, not least for the clients of these facilities, all of whom are non-nuclear weapon states, and yet may in the future be directly assisting nuclear weapons development.

In the context of the 1995 NPT Conference, it would be highly appropriate for Thorp's clients to question the intentions of the UK government, with regards military diversion of civil nuclear materials. Further, they should demand that the UK's right to withdrawal of civil plutonium for military purposes should be renounced. Otherwise, on past record, in the future the UK could use plutonium from countries as politically diverse as Switzerland, the Netherlands, Germany, Spain and so on in its military programme. ❑

*** "Sellafield and the bomb: civil plutonium in the British military programme" by Dr David Lowry (independent consultant), Pete Roche and Shaun Burnie (Greenpeace International), 10pp.**

The full, referenced, version of this paper, given by Greenpeace to delegates at the January 1994 Preparatory Conference for the 1995 NPT Review Conference, is available from Canonbury Villas, London, N1 2PN.

ANDREW WARREN, director of the Association for the Conservation of Energy, looks at the government's plans for meeting its Rio commitment on carbon emissions and puzzles over both the target and the strategy.

Carbon cuts conundrum

JUST before the end of 1993 the United Kingdom ratified the Earth Summit Climate Convention. In doing so, our government committed us to ensuring that the amount of carbon emissions caused by UK burning of fossil fuels would be no greater in 2000 than in 1990. Carbon dioxide is held to be one of the main causes of the threat of climate change.

The government has just published the full details of precisely what measures it has undertaken (or will pursue) in order to ensure that we produce no more carbon emissions in six years time than we did four years ago.

Unsurprisingly, the policy measures, which detail what savings will deliver, will not emerge like a *deus ex machina*. Throughout last year the government was engaged in an unprecedented exercise of apparent openness, seeking to involve interested outsiders in creating its programme. Many elements of the strategy are now well known, at least in outline. But the devil, as ever, is in the detail.

To begin with, the government has produced a suspiciously round figure as the necessary target. Extrapolating from *Energy Paper 59* (published in Spring 1992), it was deduced that in 1990 the UK's burning of fossil fuels amounted to 160 million tonnes of carbon. It then went on to calculate that under one scenario (low energy price, middling economic growth), carbon emissions were due to rise to 170 million tonnes by 2000.

Ergo, even the least numerate could see that what was required were policies that would lop ten million tonnes of carbon off the total. And, hey presto, the UK has fulfilled its commitments under the UN convention. And it is this target which this January's policy paper addresses. What could be more straightforward?

But a number of very significant caveats need to be raised. First, the base figure for 1990 has subsequently been revised downwards to 158 million tonnes, owing to a lower carbon factor for natural gas. Second, the figure could yet rise again by six million tonnes if emissions from offshore oil and gas platforms are included.

Dubious target

And then the target itself — that famous ten million tonnes of carbon — deserves examination. It is the result of just one of six possible scenarios posited in *Energy Paper 59*. Other options considered feasible in this government publication are a decrease of 4% or an increase of 26%.

Of course, we are now sufficiently close to 2000 to be able to plot trends. The high figure does seem too high. But, worryingly, the first three years of the 1990s produced some dreadful statistics: GNP down, but carbon emissions up, auguring very poorly for the rest of the decade. Consequently, the long-term gradual improvement in UK energy efficiency has been halted. Each year this decade we have been using increasing amounts of fuel per unit of GDP — a uniquely horrendous feat.

One further joker in the pack on the year 2000 commitment is the similar target agreed by all 12 European Union countries back in 1990. Similar, but not identical. Because the earlier target treated the Twelve as an entire entity. It acknowledged the concept of burden sharing: that is, that whilst some other less developed countries will be increasing emissions, other currently greater polluters will be decreasing theirs by more than just stabilisation, to compensate. The UK is Europe's second biggest carbon emitter. Whilst the issue of burden sharing has yet to be sorted out, it remains a potentially important one.

Enough of the target options. How do we plan to reach the official ten million tonnes reduction? The answer is, it depends upon which official figures you take. Last March, following the Norman Lamont VAT-on-domestic-fuel-budget, two different government forecasts were made of the likely impact of different programmes (see Table).

Challenged by the House of Commons Environment Committee to explain the discrepancies, the then environment minister, Tim Yeo, admitted that the two sets had been "worked out on a different basis". Quite so.

However, following November's budget, a third set of figures emerged. These appear the most likely to be formally adopted — and are therefore worth exploring further. Unlike earlier figures. these actually add up to ten, not seven million tonnes of carbon.

	Version 1	Version 2		Version 3
VAT Charges	1.5	1.5	VAT changes	1.5
Road fuel duty	1.5	1.5	Road fuel duty	2.5
Energy Saving Trust	2.5	2.0-3.5	Energy Saving Trust	2.5
Revised Building Regulations	0.5	0.25	Industry and commerce	2.5
Energy Management Assistance Scheme	0.3-0.4	0.25-0.5	Public sector	1.0
EC SAVE Programme	0.5-0.7	-		
TOTAL	6.8-7.1	5.5-7.25	TOTAL	10.0

All figures millions of tonnes of carbon

These figures have the virtue of being all-embracing and conveniently round; they avoid the absurdity of the March figures, where individual programmes were given precise figures which on examination proved ridiculous. The higher Building Regulations figure was four times greater than the projections in the official Regulations consultation exercise; the EMAS scheme assumed all savings to be solid fuel; the EC Save Programme projections were based upon the potential of the earliest SAVE Programme, long since watered down by the Council of Ministers.

But are these round figures really what they seem? Will the increases in petrol prices, indexed linked as they may be, really ensure that there will be less petrol consumed in 2000 than in 1990? Because that is what they will need to do, to achieve the carbon target.

Will VAT deliver such savings in the domestic sector? The auguries are poor, from those parts of the commercial sector (banks, building societies) which have had VAT imposed and unreclaimable since 1989. The Energy Efficiency Office has formally told me that it sees no difference in investment levels in energy efficiency between these sectors and those that can reclaim VAT.

The Energy Saving Trust? Well, it is developing programmes to meet its target. But as the select committee has stressed, there is a "huge discrepancy" between the current annual expenditure of £4 million and the £1.5 billion required over the next six years to succeed.

The public sector has an official target of cutting fuel use by 20% by the year 2000. In the first two years of its 'campaign', Whitehall's fuel expenditure actually managed to jump up by 18%.

And Industry? Will it save 2.5 million tonnes, or 22% consumption, with low fuel prices? This is the most optimistic scenario. If official targets set for CHP are achieved (up from 2,000MW to 5,000MW), then industry may yet do its bit. The potential is there. But, industry leaders like Nick Coleman of BP Energy are publicly expressing pessimism about delivery.

So that is the UK package, about which the Chancellor spoke so warmly in the last budget: "We are the first country in Europe to complete our strategy for meeting our Rio commitments." Perhaps the kindest conclusion is to describe it all as a triumph of hope over expectation. As a response to what is described as the world's most serious environmental problem, it is simply not enough. ❑

A bill which would charge local councils with carrying out surveys on homes and drawing up energy saving strategies is being sponsored by Liberal Democrat deputy leader ALAN BEITH MP. Here, he explains his bill and details the widespread support for the proposal.

House energy conservation bill

AFTER twenty-five years in the House of Commons, and having never once before been successful in the private members' ballot, I was determined to sponsor a bill which had a very strong chance of becoming law. But not one which was so innocuous that even the government would welcome it with open arms. That is why I have chosen the energy conservation bill.

There can be few if any private member's bills presented to the Commons before which have been so assured of support from members. When, in the past session, the Plaid Cymru/Green MP Cynog Dafis tabled a very similar bill as a ten minute rule bill, the supporting early day motion (EDM) received the support of well over half the House, the highest number of signatures for an EDM this Parliament.

Equally, there can seldom have been an item of prospective legislation which has received beforehand such overt endorsement by so many elected local authorities throughout the land: motions of support have been passed by over 150 local authorities already. Nor can so many charity, consumer and environmental organisations often have lined up in support of a measure. Among the bill's most prominent backers are the Association for the Conservation of Energy, Help the Aged, Unison, the Gas Consumers' Council, Friends of the Earth, Greenpeace and the Women's Environmental Network.

The bill obliges local councils to carry out surveys to all homes, publicly and privately owned, in their districts and then draw up strategies to save energy by better insulation and more efficient heating. These surveys — involving chambers of commerce, consumer and other community groups — are designed to help councils set themselves targets for energy saving of 10, 20 and 30 per cent.

The survey will also show how much money can be saved on fuel bills — particularly now they will be carrying VAT. They will also show what reductions can be achieved in emissions of carbon dioxide and the other key greenhouse gases. This scheme is modelled on the successful Energy Action Cities, promoted by the government during Energy Efficiency Year 1986 but since allowed to wither through a lack of legislative backing.

The costs of such exercises will not be substantial for councils. I am most grateful to Derby City Council and to Newark and Sherwood Council which provided me independently with estimates of anticipated costs to them of such an exercise. These show initial capital costs of below £50,000 in both cases, and annual revenue costs of between £6,000 and £8,000.

I am also pleased that my co-sponsors for the bill reflect such a wide range of members. They are: Sir John Hannam, Robert B Jones, Andrew Robathan and Gary Waller (Conservative); my Liberal Democrat colleague Simon Hughes; Barbara Roche, Clive Soley and Malcolm Wicks (Labour); Roy Biggs (Ulster Unionists); Andrew Walsh (SNP); and the bill's original sponsor Cynog Dafis.

Discussions with ministers and civil servants to date have been extremely positive. I have every reason for believing confidently that the energy conservation bill will become law this session. ❑

Electric shock

ELECTRICITY industry regulator Professor Stephen Littlechild has deferred a decision on referring the power generators National Power and PowerGen to the Monopolies and Mergers Commission (MMC).

In mid-December last year Littlechild announced that he would not, as often threatened, have to call in the MMC, providing agreement could be reached on plant disposals and prices. A final decision was expected by mid-January, but little progress has been made in discussions between regulator and generators, and Littlechild has said that he needs extra time before deciding on a referral.

The threat of referral has been hanging over the generators ever since their privatisation, the main concern being their influence over the pool price system — the wholesale electricity market.

The pool price seems to run on a cycle: the average pool price surges upward, securing large profits for the generators; Littlechild threatens action; the price falls; Littlechild backs off. Of course the drop in price is as much an indication of market control as the preceding rise.

For those on the receiving end of the fluctuations in pool price, there can be little doubt of the need to reform the system.

Reluctance on the part of National Power and PowerGen to sell off unneeded generating plant is seen by Littlechild as hindering his efforts to create more competition in the industry, but city analysts say that he is unlikely to force plant sales.

The delay over any decision on referral to the MMC is one of the factors holding up government's planned review of nuclear power.

■ The twelve regional electricity companies (recs) in England and Wales have been accused of charging too much for electricity, by an industry watchdog. The Electricity Consumers' Committee chairmen — twelve regional chairs, appointed by the electricity regulator in consultation with trade and industry secretary Michael Heseltine to oversee the recs — have called for large price cuts.

The recs are said to be abusing their regional monopolies in the domestic market and favouring shareholders over customers. Peter Weston, vice-chair of the committee reported a 21.4 per cent increase in average domestic electricity prices since privatisation of the industry in 1989.

The National Consumer Council and the Consumers' Association have made a similar charge against the recs, calling on Offer to claw back "excess returns" achieved through "unjustified" price rises since privatisation.

The electricity supply industry has recently announced record half-year profits, with large pay rises for directors, but is planning to shed up to 9,000 jobs by the end of March.

■ News that the electricity generators and distributors in England and Wales have been using surpluses diverted from pension fund schemes to prop up their profits has angered pensioners.

The privatised companies and Nuclear Electric have taken between 36 per cent and 100 per cent of the pension surpluses — which total around £1bn — for commercial benefit.

Figures compiled by the GMB union, which represents many existing and future pensioners in the industry, show the worst offenders are London Electricity (100%), Norweb (95%) and Nuclear Electric (85%).

In at least one case, Nuclear Electric, many of the pension fund trustees claim they were never properly consulted about the use of the surplus.

■ The fossil-fuel levy, a subsidy on English and Welsh electricity bills which goes mainly to subsidise Nuclear Electric, is to remain at 10% this year. Littlechild had previously said that the levy should decrease each year, but a shortfall in revenue meant that it should actually be increased this year. However, such a move was vetoed by the Department of Trade and Industry chastened by the row over VAT on domestic fuel.

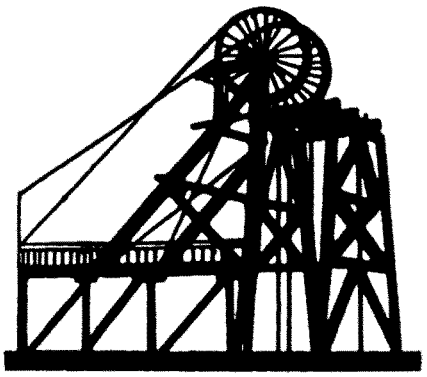
Meanwhile, Littlechild has granted Nuclear Electric permission to bypass the pool system and sell its subsidised electricity direct to large commercial customers. ❑

Coal update

DESPITE problems over who should carry the financial risk for liabilities from subsidence and injury claims, the government's plan to privatise British Coal (BC) is progressing. The coal industry bill was given a second reading in the Commons and was passed by 319 votes to 282, in January.

While some of the pits already closed by BC are due to be re-opened by private companies, the trend is for further run-down of the industry in the run-up to privatisation. British Coal's chairman, Neil Clarke, told the Commons Trade and Industry select committee in January that there are likely to be just 12 to 16 pits left operating come BC's privatisation.

This will mean a total of between 34 to 38 pits have been closed since October 1992. It was then that the announcement of plans to close 31 pits caused public and political uproar ("Coal chaos", *Safe Energy 91*). Michael Heseltine's subsequent coal review ("Little help for coal", *Safe Energy 94*) appeased most of his rebellious backbenchers but has done nothing to improve the market for coal.



■ Distortion in the energy market, which has contributed to the drastic rundown in coal mining, has been further emphasised by figures from National Power (NP), the UK's largest electricity generator. The company puts the price of electricity from the new combined cycle gas turbines at 2.7p per unit compared to 2.1p from the older coal-fired stations they are replacing.

Coincidentally, the 0.6p difference is the same as the additional cost of fitting flue gas desulphurisation equipment, according to NP's latest estimate for the retrofitting of its 4,000MW Drax power station.

■ Government weakening of pit safety rules is to be investigated by the European Union (EU). The move follows a complaint by Labour MEP for Durham, Stephen Hughes, who claims the new standards, introduced last October, are below the minimum set by the EU. Under the new regulations control of mine safety rests with management rather than pit supervisors.

■ Up to seven large deep mines could be saved from closure by increasing market share in the non-power station sectors, concludes a new report* from the Coalfield Communities Campaign.

Restoration of the Coal Firing Scheme — which added or preserved an estimated 4 million tonnes a year in industrial demand from 1981-88 — could boost coal sales in the industrial and public sectors by as much as 2.4 million tonnes a year. And improved productivity will allow deep mined coal to compete with imports and opencast coal, allowing sales of up to 12.4 million tonnes a year by 1998.

Concentration on the power station sector has given the impression of a dying industry, and unless other markets are penetrated "then all the gloomiest predictions are likely to be realised." ❑

*** "Selling more coal" by Bryan Gladstone, CCC, 9 Regent Street, Barnsley S70 2EG; £10.**

Rio commitment

JOHN MAJOR launched four post-Rio documents in January on sustainable development* with the warning that "painful political action" and higher taxes would be necessary for their implementation.

The strategy documents, on climate change, forestry, bio-diversity and sustainable economic growth, present the UK programme for meeting commitments made at the UN Earth Summit in Rio in 1992.

Eschewing regulatory methods, the government considers the market and action by private individuals as the best means of meeting the Rio targets.

The document on climate change, aimed at stabilising carbon dioxide emissions at 1990 levels by the end of the century, offers little beyond measures already announced ("Rio rumblings", *Safe Energy 98*)

Traffic growth is seen as the single biggest threat to the environment. Road traffic, which unchecked could double within 25 years, is already estimated to cause £25 billion worth of pollution damage each year.

But, rather than cut back on its road building programme, the government plans to introduce road pricing as soon as possible. This along with a five per cent annual rise in road fuel duties, announced in last November's budget, is expected, at least by the government, to produce a saving of 2.5 million tonnes of carbon emissions a year.

Commitment to public transport goes no further than its "promotion" being an option.

On energy supply, Major mused that an expansion of the nuclear power programme may be necessary on environmental grounds, but that this was "only a hunch so I would prefer to wait for professional advice".

The use of landfill gas to produce electricity is to be encouraged to reduce emissions of methane, which is a potent greenhouse gas.

With sustainable development to become "the touchstone of its policies", the government is to set up a panel of experts to advise ministers; a similar body is planned for Scotland.

In a statement far more bullish than the contents of the documents, environment secretary John Gummer asked: "Do we have to wait until disaster overwhelms us before we make the radical changes necessary to protect our world for future generations?"

With former environment secretary Michael Howard having previously opined that the commitment to stabilisation of CO2 emissions by the year 2000 meant that they could rise again thereafter, the government has finally acknowledged that further action to cut carbon emissions will be required after the turn of the century. ❑

*** "Sustainable development", £22; "Climate change", £10; "Biodiversity", £18.50; and "Sustainable forestry", £6.50; all HMSO.**

Global warning

DESPITE the continued cooling effect of debris released into the atmosphere by the 1991 eruption of Mount Pinatubo in the Philippines, 1993 was one of the ten warmest years since records began 140 years ago.

Research in the USA, reported in *Nature*, has found that satellite measurements of the upper atmosphere over the last ten years show no temperature increase, in contrast to ground-based measurements. But, scientific consensus remains that global warming is taking place.

■ The Global Environment Facility (GEF) — established to provide aid to developing countries for schemes to ameliorate global warming — is in turmoil.

Representatives of the 184 member countries have failed to agree on the share-out of seats for a new 30-member executive council. Donor countries proposed 14 seats for them, 14 for developing countries and two for Eastern Europe, but the developing countries wanted 18 seats on what will be the supreme decision-making body of the GEF.

Though another $2 billion has been pledged by donor countries, money is unlikely to be forthcoming until agreement is reached. ❑

Efficiency matters

BRITAIN'S electricity supply companies and British Gas are giving inadequate advice on energy efficiency, according to a survey by the Consumers' Association.

Despite a statutory obligation to supply their customers with information on energy saving, even when such advice is available it is often incomplete, wrong or even biased.

The findings cast considerable doubt on the government's information-based approach to domestic energy saving, which forms a major plank of its policy for stabilisation of carbon dioxide emissions.

■ Environmental commitments have fallen victim to expediency in the government's haste to introduce increased competition into the gas industry, according to the Combined Heat and Power Association (CHPA).

Energy efficiency and environmental concerns will be omitted from the forthcoming consultation document being prepared by the industry regulator, Ofgas, and the Department of Trade and Industry (DTI).

David Green, director of CHPA, has accused the DTI of "going for a short-term fix rather than sustainable development". In a letter to DTI secretary Michael Heseltine, Green says: "I was concerned to learn from the director general of Ofgas, in her first major public address, that your forthcoming joint consultation paper on gas competition will make no reference to the role of suppliers in relation to energy efficiency and the environment."

Taking up the issue in Parliament, Liberal Democrat energy spokesperson Simon Hughes tabled questions for Heseltine asking if environmental matters are to be included in the consultation and what plans there are to ensure the industry's continued support for the Energy Savings Trust, which has a key role in the government's plans for reducing CO_2 emissions.

Following some bland answers from ministers, the matter is being pursued with further questions by Cynog Dafis, the Plaid Cymru/Green Party MP, in particular over continued funding for the condensing boiler grant scheme.

■ Two House of Commons private members bills have been tabled which aim to improve energy efficiency. Liberal Democrat MP Alan Beith came second in the ballot and is therefore in a strong position to promote his proposal for energy efficiency audits of houses ("House energy efficiency bill", p17). The bill passed its second reading debate without division, on 4 February, and now moves to the standing committee stage. A plan to widen requirements for energy-saving in building regulations is being put forward by Labour MP John McAllion, but at number 17 in the ballot it has only a slim chance of succeeding.

■ Environmental campaigner Jonathon Porritt has attacked the government's Corporate Commitment energy efficiency scheme for allowing companies to pay lip service to energy saving. Porritt's criticisms came at the launch of an alternative scheme run by the Energy Systems Trade Association (ESTA).

Porritt explained that for ESTA's certificate "you have got to do something". It is only issued after independent assessors have scrutinised a company's energy use at all its sites for the previous three years.

A representative of the environment department's Energy Efficiency Office, which runs Corporate Commitment, defended the government's scheme saying "Porritt is unrealistic if he thinks you can make big organisations do things".

■ Billsavers, an innovative energy efficiency project targeted at low-income households, has been introduced in Edinburgh by the Lothian and Edinburgh Environmental Partnership (LEEP).

Over the next year 100 households in Edinburgh — carefully selected to represent a wide range of households — are being monitored for their energy use. Fortnightly readings are being taken of electricity consumption for lighting and white goods like cookers and fridges.

Next year four different energy strategies: detailed energy advice; appliance inspections and repairs; installation of fixtures dedicated to compact fluorescent lamps; and replacement of older appliances with the most efficient new models, will be introduced and their effectiveness monitored.

Payback times and methods of providing loans for the investments and are also being examined as part of the project. ❑

Wind round-up

THE three windfarms owned by National Wind Power (NWP) were shut down in December following damage in high winds to four of the turbines at its Cemmaes, mid-Wales, site.

The precautionary shut-down of all 66 NWP turbines followed gale-force winds on 8 December which broke blades on three turbines, and also ripped off transformer covers and moved a two-tonne transformer. On 19 December a fourth turbine had the rotor torn from its 27 metre mast.

In an unrelated incident, at one of NWP's other windfarms, Cold Northcott in Cornwall, a turbine fell off its mast, reportedly because of a failure to follow maintenance procedures.

While Cemmaes could be closed until April, the other two windfarms may re-open sooner. The closure of the three farms is costing NWP up to £750,000 a month.

The 300kW, two-blade MS3 machines are produced by the UK's largest turbine manufacturer, the Wind Energy Group (WEG), which also operates the windfarms for NWP.

The company is a wholly owned subsidiary of Taylor Woodrow, which is reported to be considering selling the company. NWP is in turn one-third owned by WEG, with the other two-thirds stake being held by electricity generator National Power.

Orkney demolition

Scottish Hydro-Electric (H-E) has announced plans to dismantle two small wind turbines on Burgar Hill, Orkney. It is also lobbying the Department of Trade and Industry for the demolition of the massive 3kW turbine at the site.

Though the big turbine has been out of action since December 1992, as reported in *Safe Energy 97* ("Wind round-up — Orkney wind down") repairing a crack in the rotor would be straightforward and the cost would easily be covered by the income from electricity generation.

Commenting on H-E's desire to see the turbine demolished, head of engineering Dr James Martin, said: "One of the conclusions from Orkney is that future machines should be under 1MW in size."

This view is at odds with the European Commission's decision to provide research and development money for wind generators exceeding 1—2MW ("Research funding", *Safe Energy 98*).

Welsh wind refusals

Three windfarm planning applications in South Wales have been refused by District Councils. The proposals, from Westwind Generators of Penarth, South Glamorgan, were for two 20-turbine farms and one of two turbines on the south-west coast near Ferryside.

Dyfed County Council opposed the plans, and one of the sites, which straddled a council boundary, was rejected by Llanelli District Council while Carmarthen District Council rejected all three proposals.

Though there has been growing opposition to wind farms in Wales, Carmarthen District Council has no blanket opposition and has approved other windfarms in its area. However, these latest proposals were in an area designated in its structure plan as being of outstanding beauty.

BWEA

Windfarms provided enough power for 150,000 homes in 1993, according to the British Wind Energy Association. This could rise to 250,000 homes this year. ❑

Birmingham waste scheme

A 25MW energy-from-waste plant is planned for Birmingham by the end of 1996 to process about 350,000 tonnes of municipal waste every year.

It will be operated by Tyseley Waste Disposal Ltd, a joint venture between Birmingham City Council and two French-owned companies Onyx and Esys-Montenay.

An information centre giving a step-by-step explanation of the scheme can be visited by appointment — phone 021 680 2000 for details. ❑

Tidal turbine trouble

A 'proof of concept' testing of a tidal stream turbine in Loch Linnhe, Argyll, ("Tidal turbines", *Safe Energy 94*) was postponed last November after a series of minor technical difficulties. It is hoped that the twin bladed device — to be suspended 5 metres below the water surface — will be deployed in March.

The £200,000 project is being 85 per cent funded by Scottish Nuclear, with design work being carried out by NEL of East Kilbride and energy specialists IT Power. ❑

Hot dry rocks

THE government's geothermal hot dry rocks project at Rosemanowes Quarry near Falmouth, Cornwall, is to be shut down at the end of March.

As recommended by the Renewable Energy Advisory Group last year ("Reaaargh!", *Safe Energy 93*), future research will be conducted through international collaboration.

Having spent £42 million on the abandoned Rosemanowes Quarry project, the government is to commit £3.3m to joint research with the Germans and French. ❑

Research funding

GOVERNMENT support for the country's renewable energy industry has been criticised in a report by the National Audit Office (NAO).

The development of renewable energy in the UK has been dominated by foreign companies, says the report, observing that only a quarter of windfarms established in Britain use British equipment.

The Department of Trade and Industry (DTI) is criticised for failing to back British companies in exporting renewable energy projects, according to a survey of manufacturers, commercial and academic researchers, and generators.

DTI funding for new businesses has been cut, with money being diverted to Dutch and French research into high-definition television. ❑

SNP carbon tax plan

PROPOSALS for a modification of the European Commission's plans for a carbon tax, to help remote and rural areas, have been tabled by Scottish National Party MEP Winnie Ewing.

Given the higher travelling costs faced by people in rural areas, the proposed carbon tax would hit them disproportionately. So Ewing has called for an assessment of the impact and how best to offset these costs.

The SNP's president, who represents the Scottish Highlands and Islands constituency, has also proposed a European Transport Cost Equalisation Scheme "to minimise the extra transport costs incurred by businesses based outwith the major centres of population."

"This would", argues Ewing, "help to ease congestion at the centre of Europe". ❑

VAT opposition

GOVERNMENT plans to put VAT on domestic fuel and power survived a vote in the House of Commons by 17 votes during the second reading of the finance bill when a Labour amendment failed to gain the support of Tory backbenchers who have been critical of the measure.

Tory MP Nicholas Winterton, a prominent opponent of the move, explained that he had voted with the government as legal advice suggested that the Labour amendment would have destroyed the entire finance bill.

Though some Tory rebels appear to have been appeased by the Chancellor's limited compensation package, it is possible that the measure could still be defeated in a future vote. ❑

Renewables disorder?

SCOTLAND'S first renewables order, of 30—40MW, will be more than ten times oversubscribed, according to information obtained by *Safe Energy*.

Early stages of the bidding process have brought applications for schemes totalling over 360MW declared net capacity (DNC) in Scottish Hydro-Electric's (HE) area alone. While some of these schemes may drop out during the technical/planning and economic/commercial stages, all applications are presumed to be serious as each cost £250.

Of the applications received by HE, windpower dominates with 72 schemes totalling around 270MW DNC. Most of the other proposals are for hydro power, 67 schemes totalling 57MW (DNC).

Scottish Power's (SP) region, which covers Central and southern Scotland with around three-quarters of the Scottish population, is likely to have received more applications for municipal/ industrial waste and landfill gas schemes than in HE's area. A total of 87 schemes have been proposed, with applications for each of the five available technology bands — the four mentioned above plus energy crops/agriculture/forestry wastes — "well in excess of the anticipated cap", according to SP.

In announcing the Scottish Renewables Obligation (SRO) in July last year, Scottish secretary Ian Lang promised to review the 30—40MW (DNC) figure "in the light of the quality and cost of the proposals received."

However, Lang is likely to come under pressure from SP and HE not to increase the order. Thanks to the building of Torness nuclear power station, amongst other plant, Scotland already has 100 per cent overcapacity. And with SP and HE tied to inflated contracts with Scottish Nuclear for its entire output, their own plant lies under-used despite its low marginal cost.

Although the SRO encompasses five technology bands designed to encourage diversity, the prime criterion in selecting schemes will be price. This could mean some bands being omitted or given only token representation. It is also likely to lead to unnecessary conflict over the siting of windfarms as the more economic sites are often in environmentally sensitive locations.

There has still been no announcement of how the SRO will be funded, though negotiations are taking place between the Scottish Office and the utilities. It is unlikely that much money will be put in by the government, with most, or all, of the cost being passed on to customers.

Given the uproar in Scotland over the plan for VAT on domestic fuel and power, Lang will be loath to announce any further increase, albeit hundredths of a penny per unit.

If financial and utility considerations stop Lang from increasing the size of the order, it will deter Scottish companies from entering the industry and prevent them developing a significant home base from which to expand into the growing world market. It will also fail to provide sufficient diversity to demonstrate the suitability of a range of renewables for the Scottish climate and geography — a stated aim of the SRO.

Both SP and HE are amongst the applicants: SP plans a windfarm of 9.5MW ("Scottish wind stirrings", *Safe Energy 98*), and HE has made applications for two hydro schemes, each of around 3MW.

As HE and SP will be bidding against other schemes, their involvement in the early stages of the process, quoting grid connection charges for all the proposed sites, could have given them an unfair competitive advantage in knowing information on the size, type and location of the other projects. However, the companies insist that the information they have will not be passed to the departments making the bids.

Economic and technical appraisal of applications will be carried out by Offer (Scotland), the electricity regulator, assisted by consultants. Final selection of schemes will be made by the Secretary of State for Scotland, with an announcement of the outcome expected on 19 October this year, to come into force a week later.

Further renewables orders are planned for 1995/6 and 1997/8, with a target capacity of 150MW (DNC) by the year 2000. ❑

Scottish renewables study

A report* on the potential for electricity from new renewable energy in Scotland has been produced by a team headed by the Department of Trade and Industry.

The group, which included electricity utilities and enterprise boards, looked at the theoretical potential of a range of renewables and then determined the practicable resource after environmental, planning and technical considerations.

On the basis of an eight per cent discount rate and a maximum price of 10p per unit, it was concluded that there was 7,780MW of "near to actually operationally proven" renewable resource and potentially another 590MW from less well proven technology.

However, constraints on the electricity supply network would restrict this to 1,500MW, predominantly of windpower. Scotland has a system maximum demand of around 5,500MW.

The annual output from new renewables is put at 5,800GWh, which combined with around 3,400GWh from 1,200MW of existing hydro represents about 30 per cent of Scottish electricity consumption.

Without restrictions on the transmission system caused by some existing plant, the figure could be even higher. The entire system "north of Dundee and Pitlochry does not have any capability to accept new generation without being reinforced" under the report's methodology. ❑

*** "An assessment of the potential renewable energy resource in Scotland", Highlands and Islands Enterprise, Bridge House, 20 Bridge Street, Inverness IV1 1QR, £15.**

Hydro plans

THE Scottish Renewables Order has attracted a large number of small-scale hydro schemes with capacities in the hundreds of kilowatts.

Leading the way in small-scale hydro in Scotland is Edinburgh Hydro Systems which has successfully designed and constructed six private generating projects since it was set up in 1988. It has also carried out design and feasibility studies for many more.

The hydro plant is monitored remotely at the companies Edinburgh office by telephone link. ❑

Tyre troubles

A tyre-burning power station proposed by American company Elm Energy is amongst the runners for a place in the Scottish Renewables Order, but a suitable site has yet to be found.

Plans to build the 6MW power station in East Kilbride had to be abandoned when the local development corporation, which owned the site, bowed to public concern over emissions from the plant and refused permission.

Anne Evans, managing director of Elm Energy, has criticised press coverage of the proposed plant, blaming inaccurate reporting in a local newspaper for the hostile reception in East Kilbride which resulted in tens of thousands of people signing a petition against the scheme. And she was dismayed by a fictitious report in the *Herald* which claimed the company had made and then withdrawn a planning application for a site in Clydesdale.

The company recently began operating a 25MW plant in Wolverhampton with, it says, no adverse local reaction. ❑

Whisky galore

ONE of the more innovative proposals for the Scottish Renewables Order is the use of a waste product from whisky distillation to generate electricity.

Pot ale, a mushy liquid produced after the crude spirit is distilled, can be anaerobically fermented to provide methane. Edinburgh-based Caledonian Energy proposes to set up combined heat and power plant, of about 500kWe—1MWe, on Islay, Orkney and Speyside and hope to develop further projects in the future.

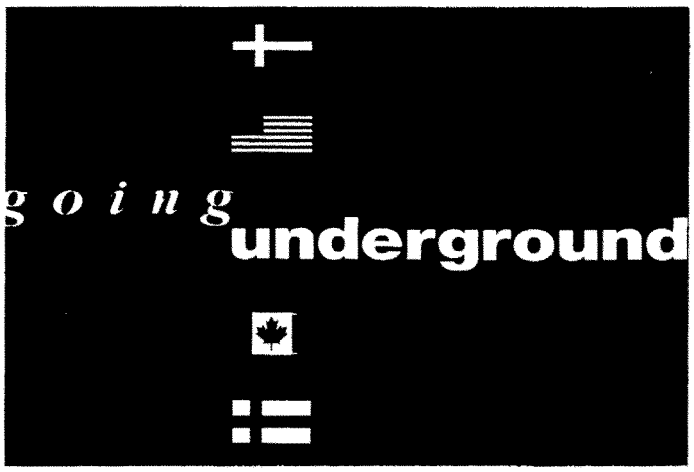
The pot ale will either be piped or brought by tanker from nearby distilleries.

Similar schemes exist elsewhere: in France using cognac waste and in Ireland using waste from creameries. ❑

REVIEWS

Going underground: how other countries dispose of their radioactive waste.

UK Nirex Ltd; 1993; 21pp, free.



This euphemistically subtitled booklet is Nirex's attempt to justify its plans to dump thousands of tonnes of deadly radioactive waste under Cumbria.

Less of a guide to "how other countries dispose of their radioactive waste" and more of a guide to the wishful thinking of waste disposal agencies in other countries, the central thesis of this volume is that if other countries are doing what we're doing then it must be right. It's not. Four and a half million people read the Sun, that doesn't make it a newspaper.

While most other countries are planning to construct deep repositories for all or some of their waste, none are operating on a timetable which owes as much to optimism as that of Nirex. Belgium, for example, already has a rock characterisation facility similar to that planned by Nirex at Sellafield which has been operating since 1983; however, it does not plan to begin construction of a deep dump until 2030. Nirex plans to begin emplacement of waste by 2010.

Canada has similar schemes to Belgium and began characterisation work in 1986 but does not plan to operate a dump until 2025. Finland is hoping to begin dumping in 2020. Spain is looking to 2020 but as yet has no site. Switzerland is looking to 2020 and the US to 2010.

However, their is no mention in the document of the massive public opposition in each country to the proposals for deep dumps. That opposition is another thing Nirex has in common with agencies in other countries. Nor is any mention being made of the trouble other countries are having with water movement at their chosen sites – as is Nirex.

In the introduction to the booklet, Nirex argues: "Nuclear wastes are an inevitable leftover from nuclear power generation and associated industries. As with any type of waste, they have to be managed so as to minimise any potential harm to people and the environment both now and in the future ...

"Most countries with nuclear power programmes are undertaking the management and disposal of their wastes in a manner similar to that in the United Kingdom."

Sadly, Nirex's logic and interpretation are once again hopelessly flawed; what its report shows is that when it comes to the industry's most deadly legacy no country in the world has a proven safe long-term method for management. Further, it shows that in comparison with most other countries the UK is operating to a very tight deadline dictated by political and economic expediency and not safety or science.

MIKE TOWNSLEY

Down on the windfarm; by Sue Walker.

Natta; 1993, 19pp, £2.

This is a welcome contribution to the debate on wind power. The author lives just a mile from the 103-turbine Llandinam windfarm in mid-Wales, and interviewed a number of her neighbours for their views of the development.

Several pages are devoted to an interview with Chris Lord-Smith, who has become well known for his opposition to the windfarm. Lord-Smith is not against renewable energy in general, or even against wind power, but would like to see small community-owned wind power schemes. It was sensible of Sue Walker to ask Lord-Smith about energy policy in general, because the issues concerning wind power cannot be considered in isolation.

Lord-Smith backs clean coal technology and energy efficiency along with small-scale renewables where appropriate, and Walker concludes that he is "an honest and reasonable man — not a Nimby," who is genuinely suffering from an unacceptable level of noise.

To put the problem in perspective, Lord-Smith estimates that there are about 20 houses badly affected by noise from the 31MW windfarm. And Walker likens the noise to living about a mile from a motorway.

There are, though, clearly problems at Llandinam. A consultants' report stated: "The noise assessment demonstrates that the windfarms will be inaudible from any nearby dwellings," which is clearly not the case. One possible reason for this — apart from the obvious one that the consultants got it wrong — is that their assessment was based on Danish Bonus Combi machines rather than the reputedly noisier Mitsubishi turbines which were used. Walker also discovered that the noise standard used was BS4142:1990, designed for rating industrial noise affecting mixed residential and industrial areas, hardly a description of rural Wales.

Walker herself, though rarely bothered by noise from the windfarm, does admit to sometimes wondering why even a minor disturbance is justified when so much energy is wasted by an environmentally uncaring society.

Tim Kirby of Ecogen, the windfarm developers, expressed his extreme anger with media coverage for exaggerating the problems in order to make "a good story". This makes it difficult for Ecogen to participate in open and rational discussion about possible problems with the windfarm for fear that whatever was said would be misinterpreted by the media.

The Wales Green Party has mixed views on wind power, with some of its councillors opposing individual proposals on the grounds of "eco-colonialism".

Walker concludes that there are problems and that community involvement may be part of the answer. She urges the Green movement "to take up the challenge of helping in practical ways to bring publicly acceptable renewable energy schemes into the real world."

GRAHAM STEIN

REVIEWS

The squandered dividend;
by Roger Manser.

Earthscan; 1993, 195pp, £11.95.

Environmentalism was a key issue as disquiet and dissent grew in Central and Eastern Europe in the run-up to the 'quiet revolution'. But those who expected that a change in system would bring an answer to the problems of environmental degradation have been disappointed.

Based on his experience from a year spent as a consultant to the Centre for Privatisation, Warsaw, Roger Manser writes with knowledge and insight about the pollution created by the Communist regimes and the failure of Western capitalism to put things right.

What little improvement there has been is mainly due to the rapid run-down of much of the East's industry.

In Eastern Germany, better placed than most of the countries, cuts in sulphur dioxide and dust emissions of 10% and 13% respectively were attributed 43% to plant closures, 55% to reduced output and just 2% to "technical and environmental measures".

The enthusiasm with which the West greeted the downfall of the old order in the East was accompanied with promises of support which have not been met.

The extent of the problem is immense — from industrial emissions and dumps of highly toxic agricultural waste to uranium mines and the legacy of Chernobyl.

Energy production, supply and consumption lie at the heart of Central and Eastern Europe's environmental problems and of the region's present economic ones.

Under communism industrial and domestic users received heavily subsidised energy. The supply of cheap oil and gas from the USSR during the 1980s, according to one estimate, represented a subsidy for the region of $100 billion.

The rapid increase in energy costs as Russia raises the price toward world market levels has sent a shock wave through industry. The speed of the change, and the lack of money for investment in energy efficiency has led to a spiral of industrial and economic decline in several countries, rather than the predicted increase in efficiency and reduction in pollution.

"The lack of resources and government dithering created a void which by 1993 had been filled by conventional wisdom, vested interests and the search for profits," explains Manser. "Top officials in the power industry used the void ... to entrench their position and where possible expand conventional energy sources. New fossil-fuelled or nuclear power stations were portrayed as an essential requirement of the anticipated higher economic growth."

The nuclear industry, in decline since the Chernobyl accident, has not been slow to see the opportunity for revival in the less regulated East.

Generally, Western aid has been selfish. European Union (EU) aid for restructuring heavy industry has been minimal lest the region becomes competitive with hard-pressed EU firms. The US delay in agreeing to a multilateral fund for nuclear safety "was thought to reflect its desire to give direct support to US nuclear engineering companies.

The book does offer some more positive examples, like a $35 million investment in pollution control equipment at a Polish lignite-fired station by the Dutch Electricity Generating Board as a more cost effective way of improving Europe's environment.

Such examples are, however, few in number in a book which paints a gloomy, but I fear all too accurate picture of the environment in Central and Eastern Europe.

GRAHAM STEIN

LITTLE BLACK RABBIT

Sticky problem

Incongruously, the nuclear industry is promoting a non-lethal weapon. Sandia National Laboratories — a nuclear weapons establishment in New Mexico specialising in nuclear safeguards — designed a sticky foam which could flood nuclear stores, preventing theft by terrorist or freelance bomb maker.

Now, with an idea stolen from 2000 AD's comic-book star Judge Dredd, the company is developing a method of firing the foam at people for use in riot control.

There is still one major problem to overcome, a familiar one for the nuclear industry, how to clean up the mess afterwards.

Perhaps they could just entomb the sticky rioters in concrete for 100 years while they figure out how to decommission them.

Waste out of time

It was a prescient Copeland Borough Council which, back in the 1970s, put a condition on the planning permission given to BNFL allowing it to gather piles of nuclear spent fuel from around the globe for reprocessing at the Thorp plant.

The condition: if the plant wasn't operating by 31 December 1993 the imported waste must be returned to senders.

It was a tardy BNFL which belatedly rushed off a planning application for a 12-month extension on 2 December 1993. But, to the dismay of anti-Thorp campaigners, the council does not intend to take enforcement action while it is considering the extension application.

Reconstruction

The European Bank for Reconstruction and Development is, of course, more famous for the fortune it squandered re-marbling the foyer of its London headquarters than anything it has done to help Eastern Europe.

Having dispensed with the services of spendthrift director Jaques Attali, EBRD is now planning to spend £1 million on energy efficiency. Is the money to be used to improve the dilapidated, leaking district heating systems of the East?

No, it is being spent on air conditioning and lighting controllers for the EBRD HQ.

Even though a two-year payback on the investment is expected, Little Black Rabbit can't help thinking that the money would be better spent in countries where, in the absence of thermostats or even manual temperature controls, heating is regulated by opening and closing windows.

ACE up their sleeve

"The environmental and economic implications of all-electric houses" sounds like an innocuous enough report. But the document, produced by the Association for the Conservation of Energy (ACE), has caused a minor rumpus.

At a bit of a loose end since electricity privatisation, the Electricity Association (EA) decided to rebut the report's findings: that all-electric homes are environmentally less friendly than gas/electric homes, producing around four times as much carbon dioxide.

However, the strength of EA's riposte, which it circulated widely (though "forgot" to send to ACE) was derogatory about the competence of ACE, amongst others.

Little Black Rabbit has heard that ACE may be considering calling in its lawyer. EA should be warned, he just happens to be Peter Carter-Ruck, Britain's most famous libel lawyer.

Sheepish news

Good news for North Wales hill farmers, well about 20 of them. Mixed news for 20,000 of their ewes and yearlings. The sheep are now sufficiently free of radiation to beat the 1,000 bequerels per kilogram test. However, that means they are now fit for the dinner table.

For the record, over two million sheep on 5,000 Welsh farms were originally affected by the Chernobyl fall-out in 1986. It was a problem which scientists confidently predicted would last for just a few months. Almost eight years on there are still 230,000 sheep on 340 farms subject to restriction orders.

Pluto in wonderland

Public opposition to nuclear power in Japan is growing, aided by the shipment of a tonne of plutonium delivered from France in 1992 and Russian dumping of nuclear waste in the sea of Japan last October.

With the country's first fast breeder reactor, Monju, meant to open this April (though likely to be delayed), the nuclear industry is keen to boost its image.

Step forward Pluto – an atom-shaped cartoon character who tells teenagers that, since it is not easily absorbed by the stomach and intestines, drinking water containing plutonium is harmless.

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