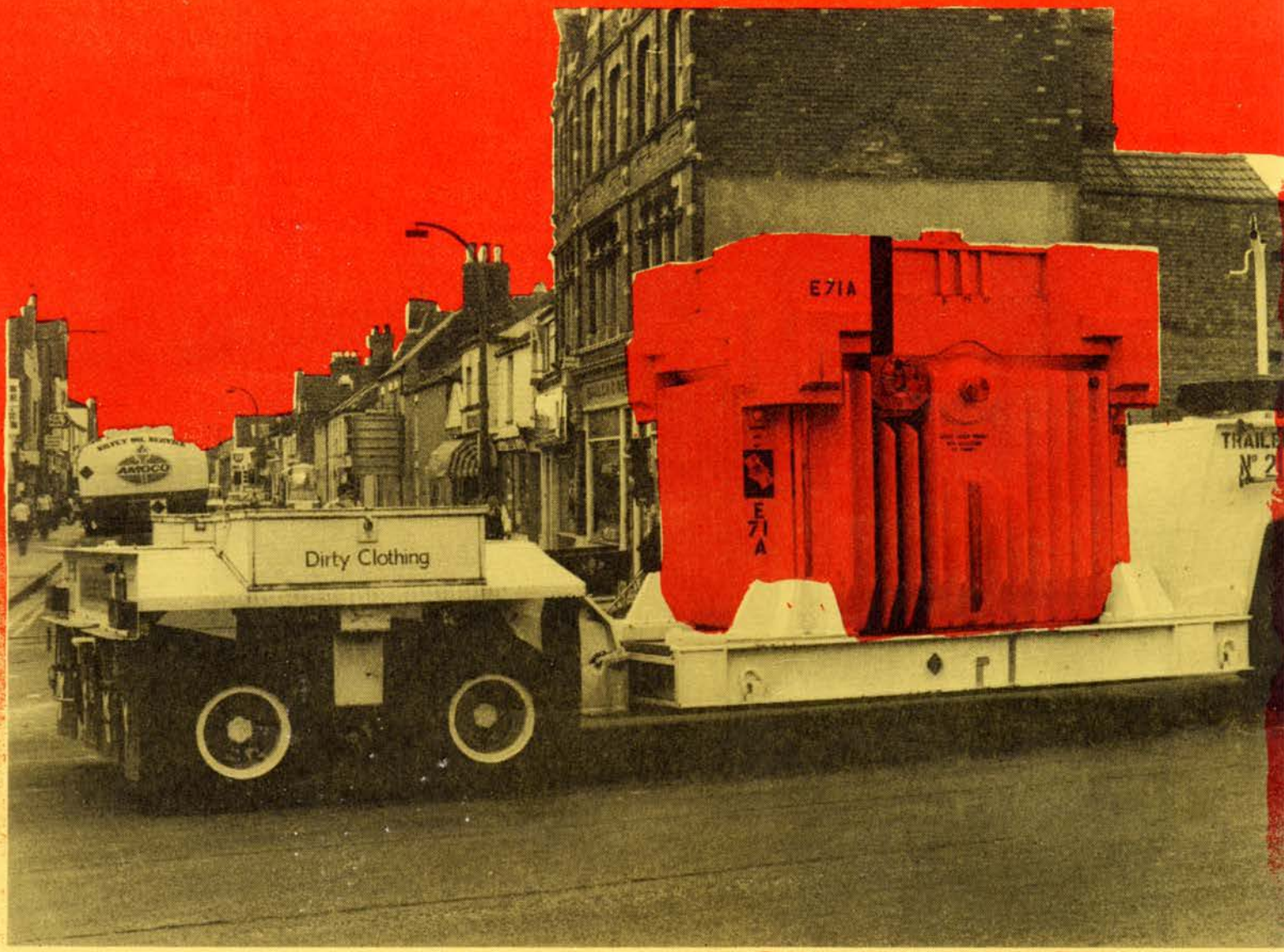
The Anti Nuclear & Safe Energy Journal

SCRAM

NUCLEAR POWER? NO THANKS

44 ≈ Nuclear Waste Issue ≈ 60p



Contents

This magazine is produced for the Anti-Nuclear, Safe Energy and Disarmament movements by the Scottish Campaign to Resist the Atomic Menace.
SCRAM, 11 Forth Street, Edinburgh EH1 3LE.
Typesetting at Edinburgh Unemployed Workers Centre, 12a Picardy Place, Edinburgh EH1 3JT.
Send contributions for inclusion, Deadline for next issue:
9th November 1984

Cover photo by Martin Bond

SCRAM urgently needs another full time worker. Responsibilities will include: helping with the running of the office; writing, editing, typesetting and laying out the Journal; and generally mucking in to keep the Campaign going.

SCRAM runs on collective responsibility and is an equal opportunity employer (ie everybody works for nothing!). Expenses are available and a wage could be available if required and the accounts can cope. The position is to be filled as soon as possible. Help with accomodation may be possible - at least in the short term.

Comment

The theme of this issue is nuclear waste - the 'dirty end' of the fuel chain. Many recent developments have brought the issues to the public attention.

With the campaign against Windscale hotting up we have produced a broadsheet in this issue. It was co-written by SCRAM, Greenpeace, CORE and Jos Gallacher. We hope it will receive wide circulation, particularly at the CND rally at Barrow on the 27th. Extra copies are available from SCRAM, bulk rates on request.

The forthcoming Public Inquiry into spent fuel transport from Torness will be taking up a lot of SCRAM's time in the near future. On page 4/5 Martin Bond has written a background piece for the Inquiry. Objections may still be lodged, and we strongly urge SCRAM readers to write to the Council at the address below. We have also set aside a page in this issue for waste news.

In the wake of the Mont-Louis wreck in the English Channel the announcement that Dounreay is the choice for fast reactor spent fuel reprocessing is the most insensitive, irresponsible and lunatic idea ever. Do they really think that highly radioactive spent plutonium can be shipped from all over Europe to the North of Scotland without stirring up a hornet's nest of opposition? The Unions have already said that they want a ban on moving radioactive cargoes by sea. Jim Slater of the NUS has asked whether stopping the sea dumping of nuclear waste has any point if cargo ships are going to sink carrying radioactive materials.

It is now obvious that the only reason Britain has been included in the Fast Reactor 'collaboration' is to take Europe's nuclear waste. Britain's 'proven' lead in reprocessing technology (at Windscale and Dounreay) has set us up to be the 'nuclear dustbin of Europe'.

All the Press coverage of the 'hex' accident has tried to play down the danger, but one quote says it all, Paul Goris, a spokesperson for the Dutch salvage team, said: "Personally I believe it is stupidity to carry radioactive cargoes by sea unless it is absolutely necessary. Commercial reasons are not good enough"(Sunday Times, 16.9.84).

East Lothian District Council, Council Buildings, Haddington

Obituary.

Everyone who has been involved in SCRAM was shocked to hear of the suicide of Karen Tosh in August. Karen worked for SCRAM between 1980 and 1983. Her energy and enthusiasm got the Smiling Sun shop off the ground. She played an important part in many issues of the Journal and helped to write a SCRAM pamphlet, "Torness: from Folly to Fiasco." She then worked on an Alternative Energy Strategy for Scotland.

She moved to London in 1983 where she helped London Energy and Employment produce an exhibition. Depression drove her to take her own life. The untimely death of someone with so much commitment and energy for the social good is sad; for us it is especially saddening to lose an old colleague and friend. We are sorry for the grief her death must have caused her friends and family.

Fire at Faslane

A fire broke out on board the dry dock at the Faslane nuclear submarine base on August 18th. Fire engines from the Dumbarton District Brigade were called out. An American Poseidon missile-carrying submarine was in the dock at the time. This may seem like a minor incident of no great importance but the facts surrounding it suggest that there is more to it than meets the eye.

The **USS Nathaniel Green** sneaked into the Faslane base on the Clyde at 7.30 a.m. on August 17th. The submarine had lost a propellor while travelling on the surface just off the Isle of Man on August 11th or 12th. The PR man at the US Holy Loch base, Lt Bob Anderson, informed us that they didn't know what caused the damage, but said that "the propellor just fell off" and that it was probably due to "metal fatigue." He also helpfully told us that this had happened to at least two other subs before, to his knowledge.

The sub returned to Holy Loch on the 14th or 15th August and then moved into Faslane on the 17th. The intervening period was probably to remove warheads from the Poseidon missiles, although at Faslane the sub is technically on active service (i.e. away from home base) and therefore should be carrying its missiles in the event of hostilities.

The sub was repaired at Faslane because the US floating dry dock, Los Alamos, is temporarily inoperable. Bob Anderson explained that Los Alamos has been out of commission since July because of corrosion in the crossmembers of one of the tank sections (the sections which flood to allow entry and exit of the subs). An example of poor quality materials and inadequate maintenance, or some other reason? You may recall that the **Sam Rayburn** (see SCRAM 42) was continually sprayed with water whilst being scraped. One month's worth of radioactive sea water may not be terribly good for steel.

The fire broke out the day after the submarine entered the dry dock. Official sources state that the cause of the fire was an electrical fault which ignited some rolls of canvas stored on deck. An unofficial source claimed that a welding torch was pointed at a gas cylinder which exploded. Eye witness accounts indicate that dense black smoke was seen over the dock and that there was a strange smell in the air, and a bang was heard.

Our information is that six sets of breathing apparatus were used whilst fighting the fire and four fire engines were in attendance. An ambulance was seen leaving the base with its lights and siren operating. No injury was reported.

John Chambers, the Faslane PR man, refused to comment when we contacted him; he became very agitated when questioned about the fire and started to shout,a contrast with the very quietspoken man we spoke to after the **US** Sam Rayburn incident. (As mentioned above, Lt Anderson was very helpful - he was a bit irritated when we spoke to **him** about the Rayburn!)

> Under arrangements made for the common defence, the United States has the use of certain bases in the United Kingdom. We affirm the understanding that the use of these bases in an emergency would be a matter for joint decision by Her Majesty's government and the United States government in the light of the circumstances prevailing at the time.

The reply we received from Dumbarton Councillor Les Robertson was very different. As a member of the Clyde Area Public Safety Scheme Committee, Cllr Robertson is responsible for the safety of the local population. He told us that this "shows up the misleading information which the MoD and the government give out. They keep saying there is no danger, yet because of the vigilance of the Peace Camp and groups like SCRAM and Greenpeace, we are seeing a catalogue

of accidents and mistakes that the Base would like to keep quiet." He added that the Safety Scheme Committee was not informed of the incident. "How many times before have accidents been hushed up?"

Cllr Robertson went on to query whether the use of a UK base by US subs was covered by a 1952 agreement (see box) or whether it was an arrangement more recently agreed on. He wondered what would happen in 10 years time when "Holy Loch is closed down" as the US fleet is replaced by Trident subs based in the US. "What happens if something goes wrong with a Trident off our shores, which isn't unlikely considering their record so far?"

There are still some loose ends to this story. The sub took some 13 days to repair - an inordinately long time for simply replacing a propellor. We understand that the entire prop shaft may have had to be replaced. Also, the propellor is still on the bottom of the Irish Sea; will the US mount an exercise to recover the prop, using their rescue vessel Challenger? Let us know if you see strange goings-on off the Isle of Man.

The catalogue of recently discovered incidents - the Sam Rayburn incident, Los Alamos rusting, the Nathaniel Green losing a prop, and now the silicon chip testing fracas - do not lend credence to a belief in the ability of NATO to defend us in the event of war. We don't know when the Los Alamos will be back in service, but until it is we can expect more US vessels using Faslane for repairs.

Kevin Elliot

Cancer Express

The proposal by the SSEB to build a new railway siding near Torness, for dispatching spent fuel to Windscale, will be a valuable opportunity to re-examine the dangers of this traffic and galvanise campaigns of opposition.

The SSEB's application was refused by East Lothian District Council "in the interests of public safety". The SSEB appealed and the Secretary of State for Scotland called a Local Public Inquiry, to begin on October 23. At stake is a proposed 'railhead facility' - a siding from the Edinburgh to London main line joining a new access road from the A1: straddling both would be a gantry crane for transferring spent fuel flasks between trains and lorries. While the local Council, SCRAM and others are hastily writing their objections, we can give a preview of some of the issues, old and new, that this proposal raises.

It seems likely, however, that the risks of transporting spent fuel may not be considered by the Inquiry; it will be limited to planning considerations for the proposal. Nevertheless, planning inquiries should be about land **use**, considering not just a proposal to build a siding, road and crane, but also the activities that are the result of their being built. Therefore, as the Inquiry should look at the road and rail traffic that will be generated, so there should be an opportunity to raise most of the health and safety issues intrinsic to spent fuel transport, even if the subsequent risks to other areas like Edinburgh or Newcastle are excluded.

Usually spent fuel flasks are carried by lorry to the nearest existing railhead, which may be several miles away, to begin the journey to Windscale. (Chapelcross sends its spent fuel flasks to Windscale entirely by road.) The rail journeys are by 'dedicated' trains, i.e. carrying no other freight, timetabled regularly once or twice a week, and predictably secret - if you ask BR when they run, they won't tell you.

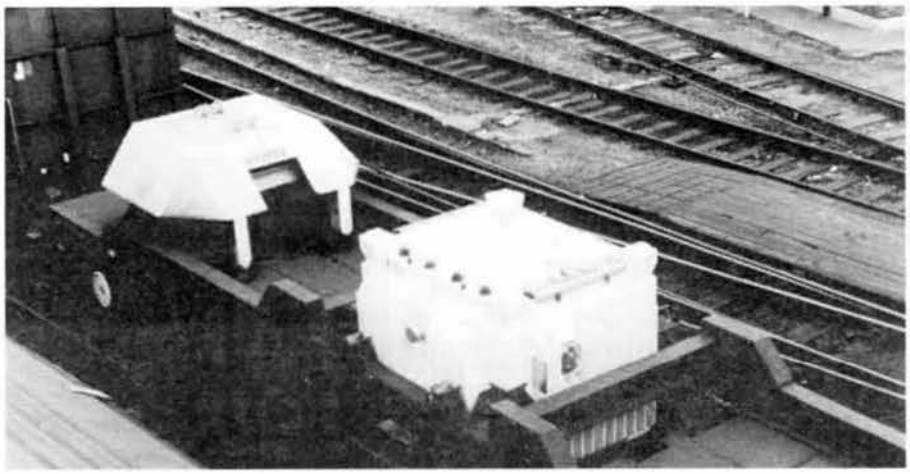
However, for waste-train spotters there is plenty to see: during 1981, for example, 611 flask loads of spent fuel arrived at Windscale from SSEB and CEGB power stations, with an extra 92 flasks of imported spent fuel coming through Barrow, Hull and Harwich docks. In addition, 12 flasks were sent from various nuclear power stations to CEGB's laboratories at Berkeley, Gloucestershire.

At Torness there would be two flasks per week leaving the power station, with a similar number of empty flasks arriving from Windscale. As one of the major worries has been the potential for accidents, the operation is vulnerable at several stages, particularly the short lorry journey from the power station which involves crossing the A1 to reach the railhead and the railway connection with the high speed East Coast main line. Unless the likelihood of collision with either other road or rail traffic can be guaranteed nil, then the Inquiry must consider the accident risks and the possible consequences of moving flasks into, and out of, the proposed railhead.

These implications, especially traffic affecting a trunk road, would normally be recognised as essential criteria in determining planning decisions. If then the accident potential **is** recognised, it must be thoroughly assessed in combination with all possible adverse circumstances: the flask lid bolts may not be secured; the flask may be struk by a petrol tanker while crossing the A1; a Scottish blizzard may hold up the fire brigade. Immunity from such bad luck, however remote, can never be guaranteed, so the Inquiry **must** look at the integrity of the flasks.

If the potential for a serious accident and radiation leak is recognised, the Inquiry must then consider the consequences. According to the CEGB, "No one would come to any harm if a flask cracked. If the water in the flask leaked it would cause only mild contamination on the ground in the immediate vicinity of spillage. It would be cleaned up by using detergents and water."(1). The implication being that a bottle of Fairy Liquid would be of more use than a Geiger Counter! Others would argue that it doesn't matter if the effects of an accident, in, say, Edinburgh are deemed irrelevant by the Inquiry, because a major leak at even the Torness railhead could in any case contaminate such a wider area, merely by the whims of the wind.

In the wake of the CEGB's train crash extravaganza, the SSEB will probably anticipate an easier ride on this - but for one small detail: the CEGB test was on a Magnox flask and AGR spent fuel flasks have a different design and construction. Precisely what tests have or have not been performed on AGR flasks and what amount of fire and impact they can withstand, will be one of the major issues. Inquiries to the CEGB to date suggest that they don't even know what an AGR flask is, or if they do, they've not been saying. Therefore, whether AGR flasks have been tested against such corrosive materials as, say, hydrocyanic acid, which regularly travels the same line, must remain in doubt.



Martin Bond

AGR flasks have thinner steel walls with an internal lining of lead. A report in Peace News earlier this year suggested there have been problems. The factory responsible for testing the lead **in situ** for air-bubbles etc. found that flask construction made this difficult. No method of non-destructive testing could be successfully applied, so the nuclear authorities suggest X-rays - until they realised the dose required. (More than spent fuel emits.)

In any case, the nuclear industry has apparentlly still not yet tested a full sized

flask to full IAEA requirements, i.e. an impact test followed by a fire test **on the same flask.** The fire test itself, 800°C for a ½ hour, has repeatedly been criticised as inadequate and, in any case, problems such as human error and deliberate sabotage can never be tested against.

AGR flasks differ from Magnox flasks because their fuels are different. Highly radioactive uranium dioxide is used in AGR's as opposed to natural uranium in Magnox. Another difference has been pointed out by the Union of Concerned Scientists.(2). Unlike Magnox fuel rods, which are solid uranium metal, an AGR fuel rod is a tube filled with uranium dioxide pellets. Cancer-causing caesium (134 and 137) gas can diffuse out of the pellet into the gaps between pellets and the inside wall of the fuel. As fuel rod cladding is relatively brittle after irradiation, any impact which ruptured the fuel rod would release Caesium into the cooling water inside the flask.

Thus, CEGB claims that a flask leak would be harmless must be seen as PR optimism, especially when one adds in the dangers of the 40 or so other fission products:- plutonium, strontium, ruthenium, et al. Even though a disastrous accident is very unlikely it is important to know the range of **possible** accidents, including the worst.

A more persistent problem has been the recurrence of external contamination. A 1983 confidential Report of a joint BNFL and CEGB Panel of Investigation (3) highlighted "chronic" contamination on the outside of spent fuel flasks. Head of Safety and Medical Services at Windscale, Mr Donoghue noted **90** cases of contamination between 1980 and 1982, suggesting that they are caused by the "egress during transportation of activity previously hidden within recesses and generally inaccessible regions on what is effectively the outside of flasks...". In plain English, not only is the inside of a flask radioactive, but the outside may be as well.

Singled out as persistent hot spots were lid bolts, bolt holes, and the join between the lid and the flask. Significantly, two thirds of contaminated flasks were empty ones returning to the power stations, suggesting that the contamination was brought back from Windscale. In addition, parts of the flatrol railway wagons on which the flasks travel, such as couplings and brake hoses, have also been contaminated "in positions not obviously related to flask contamination" - a phenomenon which the Panel themselves could not properly explain.

How much of a hazard this is for the rest of us is debatable as the degree of contamination in individual cases is not published, but if it's any consolation, even the Panel noted that:
"the results of what data interpretation has been carried...has not been made as freely available as might have been desirable".

This is a routine problem identified by the industry itself and recurring regardless of any other 'incident'. The Inquiry must therefore decide whether planning consent for a railhead will also be consent to contaminate roads, fields, people, or whatever.

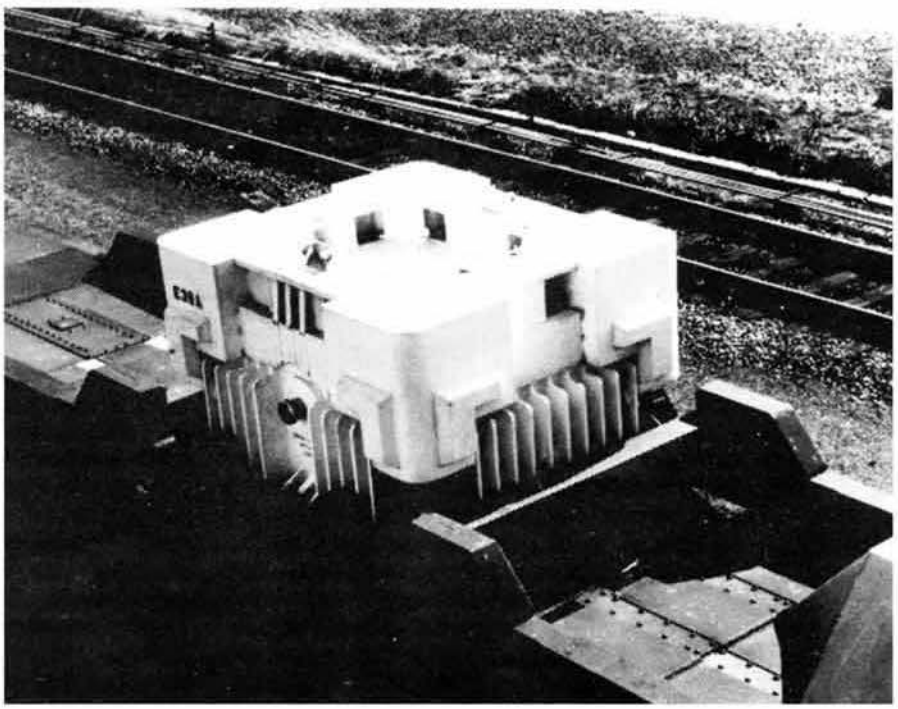
Clearly one must object or the nuclear industry will assume our tacit approval, but what are the alternatives? If the railhead is refused, the SSEB might consider a rail-link directly into the power station, topography permitting (as at Heysham and Hartlepool), which would remove one potential black-spot, the A1 crossing. Failing that there's the remote possibility of trucking spent fuel to Windscale, although road tranport must present far more dangers than rail.

Spent fuel transport has been described as the nuclear industry's 'jugular vein'; the industry cannot function if this lifeline is severed. In 1975, for example, New York City banned spent fuel transport and reactors at the Brookhaven Institute on Long Island were nearly forced to close when their cooling ponds filled up. Would Torness grind to a similar halt? Campaigners must hope so, but in reality the nuclear industry has a final option of storing spent fuel at the power station itself. In fact, AGR spent fuel has been stored ever since the Head End Plant at Windscale was closed in 1973. Reprocessing of AGR fuel can only begin again if and when the new THORP plant is commissioned. However, opposition to reprocessing with all its consequences, and the evidence of successful oxide fuel storage to date, suggests that opposition to spent fuel transport might metamorphose into a different argument, namely waste management, with the uncomfortable choice between contaminating Cumbria or filling up Torness. The only alternative which avoids this dilemma is, of course, to **halt the construction NOW.**

References

(1) "Transport of Irradiated Nuclear Fuel." CEGB leaflet, 1983.
(2) The Union of Concerned Scientists, "The Nuclear Fuel Cycle." Cambridge, Massachusetts, and London, England: The MIT Press, 1975.
(3) "Surface Contamination of Irradiated Fuel Transport Flasks and Flatrols in traffic between BNFL Sellafield and CEGB nuclear power stations": Confidential report of the BNFL and CEGB Panel of Investigation, March 1983.

Martin Bond



Martin Bond

Leakaemia-a Black Joke

Yorkshire's TV programme, "Windscale - the nuclear laundry" brought prolonged local disquiet about radioactive discharges to a wider public. The ensuing furore forced the government to institute a face-saving epidemiological study under the chairmanship of Sir Douglas Black, a well respected figure who had previously chaired reports on health risks associated with smoking and poverty.

The Windscale report failed to reach the high standard of his earlier reports. Black's efforts have left both parties claiming a victory - the anti-nuclear lobby because the allegations of extraordinary levels of child leukaemia have been substantiated, BNFL because their operations are not identified as the cause.

The inquiry's terms of reference, set by the Minister for Health, did not include establishing the cause of the alleged leukaemia cluster, which the report avoided. However, Black accepts that there is "a higher incidence of leukaemia in young people resident in the area" (p.245) but goes to great lengths to explain the uncertainties and difficulties of this epidemiological study:- low incidence of the disease, a transitory population, changing registration criteria, a limited time period. After signposting the pitfalls, Black then proceeds to dive into one of them.

An important statistical approach is to determine whether the group under study are part of the normal population, for which you need a normal population. Great store was placed on a study of 765 electoral wards which placed Seascale only third. However the second-ranked ward had a population of 97 and one incidence of leukaemia. As leukaemia is an all or nothing phenomenon, had the single case not occurred, this ward would have been ranked bottom, not second. A letter in **Nature, 15/9/84**, points out that the relevant statistical test is the Cumulative Poisson Probability, which for Seascale, including two new cases of leukaemia not included in the original study, gives a probability of Seascale having its recorded incidence of leukaemia by chance as 1×10^{-6}.

The controversy revolves around the importance of Windscale "does not necessarily mean that radioactive waste discharged from the Sellafield site into the atmosphere and sea nearby is the cause of the increase." Black uses a variety of models and data on discharges to demonstrate that "at most less than 0.1 deaths from leukaemia would be expected from the discharges" which with the higher reported level exonerates BNFL. Interestingly, if the local incidence of leukaemia was higher, Sellafield, in Black's terms, would be further exonerated.

The exoneration of Windscale depends on the calculation of radiation exposure of the population and on assumptions on the effect of exposure. A linear relationship is assumed, for no obvious reason. It may be that prolonged exposure, as experienced by the population of Seascale differs from acute exposure. Alternatively the models for uptake may be incorrect. Black does point out that "there is no substitute for direct measurement" and recommends further epidemiological studies:- a birth cohort study which will follow all births since 1950, and studies on cancer registries and Down's syndrome.

To many people there is a prima facie case for Windscale causing the abnormal levels of leukaemia. Even Black admits "radiation is the only established environmental cause of leukaemia in children within the limits of present knowledge." A quick slash with Occam's razor indicts BNFL.

HARM (Highland Appeal for a Radioactive Monitor) are trying to raise money to buy a Geiger counter to monitor radiation around the Highland coastline. They need £1,000 to buy one comparable to those used within the industry.

So far they have raised £200 and donors included Winnie Ewing the Euro MP for the Highlands and Islands, but they still have a long way to go, so dig in your pockets and send your contributions to:-

Pam Noble, The Old SchoolHouse, Kyle of Lochalsh, Ross-shire.

BNFLoundering on

Bad times for BNFL, but good times for bossman Con Allday whose payola as Chairman has risen in consecutive years from 17 to 22 to 58 thousand pounds. He is also BNFL's chief executive, for which we assume he receives yet more pennies.

BNFL is to be prosecuted on five counts following Greenpeace's discovery of an otherwise unreported leak. The charges include failing to keep radiation exposure as low as reasonably achievable, failing to keep adequate records of discharges and infringing the nuclear site licence. Conviction will probably lead to fines which involve a nationalised industry (government) paying the courts (government).

The new PWR fuel fabrication plant has been opened at Springfield, nominally for export, but in practice pre-empting the Sizewell inquiry.

A new ship has been ordered for Pacific Nuclear Transport for the movement of material to and from Japan, presaging an increase in this activity. Meanwhile a fuss is being made in the US Senate and by Greenpeace about the shipment of 150 kg of plutonium from France to Japan. Greenpeace has a ship standing by.

It is not widely known that BNFL have quietly supplied Japan with about 1500kg of plutonium from Windscale. Japan has no need for more plutonium. They have sufficient for four years of further operations in their declared programmes.

Quietly hidden in BNFL's annual report is the £33m loss on long-term contracts relating to fuel services. More information would be appreciated.

So far, the USAF base at Molesworth has been empty, but the US Congress agreed earlier this year to spending $15 million for preparing Molesworth for the installation of 64 cruise missiles in 1988. At the moment, the Wheat for the Starving Campaign is planting wheat on the site. This is to be sent to Eritrea, now suffering from famine, disease, and war with Ethiopia, aggravated by US and USSR interference, whose possession of nuclear deterrents does not prevent from shadow fighting in the Third World.

The wheat will be harvested in October, and on Saturday 20th, together with donations from local farmers and healthfood shops, will be collected by the Eritrean Relief Association for shipment from Liverpool docks. A minimum of 20 tonnes is needed to make it a worthwhile cargo and we appeal to all who support this cause to bring whatever donations they can of flours, grains and pulses to Molesworth at 12 noon on that day. Rakes and hoes will also be needed if you would like to help sow the next crop of winter wheat.

The logic of using land to feed starving people rather than to cause their destruction is one which even the MOD has difficulty arguing with. Like Ghandhi's salt march, this is a campaign which started in a small way with something that everyone can identify with. It is to be hoped it will develop in the same way.

Druridge Matters

The CEGB are presently carrying out a second set of drillings on a coastal site in Northumberland. They are hoping to use the site for PWR's, one of a series after Sizewell B. They are negotiating with the farmer for the purchase of the land, there is no doubt as to their serious intentions.

Equally serious is local opposition. The County Council is unanimously opposed for various reasons, only some of which are anti-nuclear: the area is well-loved beauty and amenity area. The local mining community sees it as a threat to its future, the site is on top of workable coal reserves. The CEGB is not deterred by such disapproval.

Northumberland County Council, and local borough council, employees have been requested to impart no information on highways or any other matters to CEGB employees.

Friends of the Earth (North East) is conducting a campaign to bring the importance of this greenfield site to the greater attention of the anti-nuclear movement: Druridge Bay is the 1980's Torness Point.The group closest to Druridge, the mid-Northumberland FoE, is conducting a vigorous publicity campaign. It started by building the cairn (see SCRAM 43), the foundation stones of which were laid by notable local VIP's. Members spent summer weekends there, attracting the attention of visitors. The groups are running a petition, over 10,000 signatures at present, organising concerts and events and keeping up an onslaught of press releases, letters and opinions in the local press. Local people must think there are hundreds of members at work!

Obviously what happens at Sizewell will affect Druridge, as well as the other sites at Dungeness, Winfrith and Hinkley. However, whether the PWR gets the go-ahead or not, the site is intended for nuclear development.

At the time of writing mid-Northumberland FoE is attempting to purchase the farm in question. The farmer has accepted an offer from the CEGB, as he has purchased another farm locally. However, he has said he would seriously consider an offer from the group if it could be made

Margaret Eagle, Tynephoto

in time. There are certain advantages for him in selling to FoE, not least that the farm could be rented back to him. At the moment great efforts are being made to arrange for loans or underwriting for the vast amount of **£700,000.** Over **£10,000** has so far been raised from individuals. If this can be arranged before the contracts are signed there is a chance that FoE can buy the farm, then distribute crucial sections of it across the world, as was done at Otmoor.

SCRAM readers who have influence with wealthy individuals, unions or organisations are requested urgently to contact the FoE group co-ordinator for full details:
Lindy Conway at 0670 57365.

Obituary

Hilda Murrell was murdered by a person or persons unknown. She probably came home to discover an intruder who took her away by car, assaulted her and left her to die of exposure. Fourteen days before her death she had applied to read her evidence at the Sizewell Inquiry:-"An ordinary citizen's view of Radioactive Waste Management."

Hilda graduated from Cambridge in 1928. An expert on roses, she was a founder member of the Soil Association and ran her own company. She became interested in the hazards of nuclear power generation. Her evidence, which has been checked for accuracy by anti-nuclear experts, is available from the Inquiry Secretariat, The Maltings, Snape, reference HM01.

HM01 contains ideas one has in sleepless nights, or half-drunk in the pub, refined into replies to familiar arguments such as 'the-people-who-live-in-granite-houses..." beloved of nuclear proponents. Hilda says:- "The inhabitants of Aberdeen and Cornwall are not commonly seen chewing pieces of their native rock: for it is the ingestion of radioactive elements that constitutes the main danger," or refutes "the shocking but frequently used non-argument that because people put up with 6,000 road deaths a year why worry about a little more danger from nuclear power? One evil does not justify another, and the opposite conclusion should be drawn, that both evils should be abolished, or at the very least, that another should not be added."

We in the anti-nuclear movement owe it to Hilda Murrell to make her the star she could have been, by all accounts, had she lived to be the oldest witness in Sizewell. We should recall such statements as "the transport unions who have now put a stop to the practice (of sea dumping) stand for civilisation, and the government for barbarism"; "what sort of system of energy-production is this, which on top of all the extraordinary, dangerous, exceedingly expensive and barely half-tried stratagems already mentioned, has to resort to such desperate measures as this (disposal of HLW under the ocean bed) and all just to try to get rid of the rubbish? How can nuclear power be anything but many times dearer than any other system of energy-production ever devised?"; "billions are lavished on the [nuclear] industry while the watch dog organisations are starved of recources, when the protection of the public should be the absolute priority."

That would have been dynamite on TV when coming from a dear old middle-class lady of the type normally heard saying,"Isn't Mrs Thatcher doing a wonderful job, but should she not be a bit stricter?" rather than the usual mid 30s bearded leftie researcher type seen putting the anti-nuclear point of view.

Most threatening to the pro-nuclear lobby was the fact that Hilda was one of the Prime Minister's beloved small business persons and as such she comments on THORP:- "No businessman in his senses would take on such a proposition as this, so why is it inflicted on the British tax-payer and electricity consumer?"; "How many successors to THORP mark 1, the size of Wembley Stadium, could Windscale accommodate? With 10 years construction and a 10 year life, construction on this part of the nuclear cycle would be perpetual." "This is a failed and dying industry, which is a major liability, and should be closed down. The fact that plans can be made for adding to it shows an unbelievable degree of irresponsibility and stupidity in all concerned."

Hilda's innocent voice against the nuclear industry is like the child's voice pointing out that the Emperor has no clothes. One sentence of hers should always be remembered by the anti-nuclear movement:-

The first concern of the nuclear industry is its own perpetuation.

Linda Hendry

A lorry containing a mock-up of a concrete radioactive waste block, symbolising NIREX's proposals to dump nuclear waste under Billingham, led a convoy of cars from Cleveland to Windscale on September 8th. 20 cars, containing 50 people, made the journey.

The composition of the convoy showed Billingham's broad-based opposition to the NIREX plan. It involved all major political parties, trade unions, civic heads, environmentalists and ordinary people. Members of the Patterdale Peace Group cheered the convoy when it passed the M6 intersection at Penrith.

At 3.15 we erected banners outside the main gate: - THE PEOPLE OF CLEVELAND WILL NEVER ACCEPT RADIOACTIVE WASTE DUMPED UNDER THEIR COUNTRY and THE CHILDREN OF CLEVELAND DESERVE A BETTER HERITAGE THAN A RADIOACTIVE BURIAL GROUND. After Press interviews the speeches began.

Fred Jones, BAND's Action co-ordinator, stressed that this was a peaceful demo to show BNFL (one of the NIREX partners) that Billingham will never accept their plans. Conservative MP Richard Holt criticised the Government and the DoE for ignoring Cleveland's protests. However his alternative plan of dumping in the Australian desert upset some people, not least Zohl de Ishtar, an Australian, who said that nowhere was suitable for waste dumping.

Pete Wilkinson pledged Greenpeace's support for BAND's campaign:-"I congratulate the people of Billingham for their community spirit." He told us to knock on his door should direct action be required. Jean Emery of CORE spoke emotionally about leukaemia deaths as a result of Windscale and ended by saying that together we are winning.

A formal letter of protest was handed in for Con Allday, BNFL Chairman. The duty officer claimed that no senior member of staff was on duty - a little hard to believe you must agree.

Local people advised us not to venture onto the beach to look at the pipeline as we had intended, and so we decided to head off home.

Paul McGhee, BAND

A one-hour video of the Protest will shortly be available from BAND, cost £5. 152 Queensway Billingham Cleveland tel. 0642 535005

Bedford County Council, strongly opposed to plans for a nuclear waste dump in Elstow, tried to take out an injunction against NIREX to stop them taking soil samples, but their application was refused by the courts. They have now served 'stop and enforcement' notices on NIREX, effectively blocking any further exploratory work. The notices takes three days to take effect and NIREX went out to do test drilling on the day they were issued. However they met with mechanical problems and were unable to finish their work.

North Bedfordshire Councillor Mike Dewar says that the test holes they **did** drill filled with water, which lies beneath the clay beds. NIREX has denied this, but Mr Dewar said, "If they are saying all the test holes did not fill with water they are covering up. It is complete nonsense".

It also appears that NIREX personnel are changing the parameters for their repository. Their glossy brochure says 40m of clay is required but, following soundings in different areas, they have given much lower figures - less than 40 feet in Ampthill! NIREX is not making many friends.

Bedfordshire Times, 26.7.84

NIREX is considering a proposal to dispose of radioactive waste in the seabed off the Orkneys. The proposal comes from ENSEC, a subsidiary of Cluff Oil, who have been told by NIREX to go away and prepare further evidence. The word is that they are presently spending **£100,000** on a study into all the different methods of storage and disposal.

At a recent meeting Dale Campbell-Savours, MP for Workington, suggested to NIREX that they should join with other bodies from nuclear nations around the world and find an island to store all the world's nuclear waste, and get the United Nations to guard it. Someone remarked that they've already found it, it's called Britain. Alex Copson of ENSEC told Mr Campbell-Savours that he would include his suggestion in the study. Which all goes to show that they haven't really got a clue what to do with it!

A report by the International Council of Scientific Unions, on the geological disposal of radioactive wastes, has concluded that storage for at least 100 years is essential. It found that knowledge of geological conditions and of mining technology was limited. Work so far has been laboratory research, and much wider research is needed, including underground laboratories in all proposed rock types.

Nature, 16.8.84

Japan's nuclear industry is doggedly pursuing the plan to dump nuclear waste in the Pacific. On August 14th a meeting was held between Pacific Islands Groups and the Japanese Science and Technology Agency to exchange information on the proposed dump. Response from the STA was limited, although the following extracts reflect their general approach.

Pacific Concerns: "What does the Japanese Government mean when it says that it will seek an 'understanding' with Pacific people before going ahead with its dumping plans?"

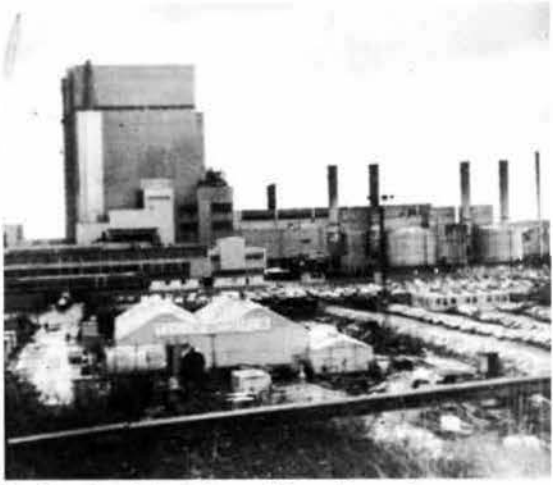
STA: "'Understanding' has different meanings. We will 'explain' the safety of nuclear waste dumping and we will expect the people to understand...We will do this at the London Dumping Convention but cannot promise where, to whom, or how else we will explain. We do not know how many people or islands there are in the Pacific so we cannot say how we would reach them...Anyway the issue of gaining the 'understanding' of the Pacific people is **not** an official policy of Japan. We may implement our dumping plans without an 'understanding'".

PC: "What is the official timetable for Japanese nuclear waste dumping in the Pacific?"

STA:"We plan to implement nuclear waste dumping in 1985, depending on the conclusions of the LDC. It may happen that Japan will apply this Autumn (1984) for a dumping permit in order to have approval one year before the dumping in 1985, after the LDC decision, but we have not decided yet."

This shows how crucial the LDC decision is, to all nuclear nations. Some Pacific countries wish to set up their own form of regulating body, as they consider the LDC to be created for the West, especially Europeans, with the intention of justifying and regulating waste dumping. Japan is able to ignore the Pacific Islands' governments and work solely through the LDC. The Pacific Islands were one of the main driving forces in achieving the moratorium on Atlantic sea dumping; we must support them in their struggle.

All Gone Rong


Ian Welsh

Permission for the construction of an Advanced Gas-cooled Reactor at Heysham was sought by the Central Electricity Generating Board in 1967. The application was welcomed by the local council on the grounds that it would provide much needed employment in the area, a fact much played upon by the CEGB in the lavish public relations exercise which accompanied the application. This included a public exhibition staffed by some of the senior CEGB planning engineers. When asked whether Heysham would produce any "disagreeable by-products" they gave the following answer:

"The only product the Heysham power station will produce is electricity. There will be no 'by-products' at all."

It is indicative of the general level of public ignorance which then existed about nuclear power that no formal objections were made. At the time environmental concern was focussed on the possibility of a tidal barrage being built across Morecambe Bay and the effects that this would have on the local wild life.

This is perhaps doubly surprising when one considers that Heysham was one of the first nuclear power stations to be sited near a large population centre (100,000) under the relaxed siting criteria based on the 'advanced' safety characteristics of the AGR.

The safety analysis upon which the decision was based has never been released and in fact may not even exist. At the time of the near urban siting decision the Minister responsible, Richard Marsh, stated in Parliament that:

"No report, in the accepted sense, was made to me. After a long series of technical deliberations, the Committee agreed to recommend to the Government the new siting policy. I do not propose to publish the proceedings of the Committee." (HCD vol 759:389).

At public inquiries since 1976 the CEGB has failed to gain permission for any further near-urban sitings.

Work started on Heysham 1 in 1970. The station was to have two 660MW reactors, cost £712.6 million, and be in service by 1976. It finally supplied electricity to the grid in July 1984, **eight years** behind schedule and at a cost of **£1,424.5 million**, almost double the initial estimate. Even this does not really represent a completion date, for as yet only one of the two reactors is giving power. In June 1984 officials at the station were anticipating that the station would not be fully commissioned until December 1985.

The delays in commissioning Heysham 1 can be accounted for by a number of factors which have plagued most AGR's; the main ones being continual design changes and appalling industrial relations during the construction phase. During the 1970's the Nuclear Installations Inspectorate (NII) intervened on safety grounds. Among the changes they demanded were the substitution of pre-stressed concrete for steel in the boiler closures and additional emergency shut-down arrangements.

The latter requirements were met by the installation of tanks containing a neutron absorbing gas which could be dumped into the reactor to shut it down should the control rods fail. The system was then further augmented by Boron Balls which would be injected throughout the system under high pressure to achieve the desired shut-down. Whether these could ever be retrieved to enable the reactor to operate again remains doubtful.

Corrosion problems led to changes in the design of boiler tubes in 1972. In 1978 problems with the gag design, which controls gas flow, led to a downrating of 15% to 1,150MW though this was expected to be 'temporary'. Subsequent changes have included the demolition and reconstruction of much of the spent fuel handling facility.

In 1979 it was revealed that faulty concrete had been incorporated into the pressure vessel and was only discovered by chance when an NII inspector noticed a patch of wall with a different colour. **Twenty cubic yards** of faulty concrete thus escaped initial detection and in the end only **four** cubic yards were replaced.

Cramped, inhospitable working conditions and mismanagement have led to frequent strikes at the site. One of the bitterest strikes followed the dismissal of a night shift foreman after he had punched a member of the management he found in bed with his wife. Lagging and insulation work within the core was subject to frequent delay, and at one point thousands of mounting bolts were installed the wrong way round as part of a 'silent protest' over working conditions. Most seriously, perhaps, working conditions combined with a widespread belief amongst the workers that "it will never work anyway" led to a disregard of in-core safety regulations. The inside of an AGR core must be clinically clean yet reports abound of workers defecating in corners instead of crawling hundreds of yards to reach a lavatory. More serious infringements include the abandonment of tools in remote parts of the core.

The commissioning of new nuclear power stations is always beset with conflicts of interest. On the one hand is the need to proceed slowly to ensure safety, and on the other hand is the need to get a return as quickly as possible on the massive capital investment. Given the present miners' actions in defence of their industry,one has to assume that both the CEGB and the Tory Government place a further premium on the prompt delivery of nuclear power from stations like Heysham.

Generating power on reactor I has proceeded apace, currently standing in the region of 430MW, of which 500MW is used internally, leaving 380MW for the grid. Efforts to bring reactor II on line were recently dealt a further blow when blanking plates, used in pre-fuelling tests, were left across two channels after the reactor had been loaded. The ensuing NII investigation is expected to take ten weeks.

After eight years of delays nuclear power is being produced at Heysham for double the investment intended. Whether the station meets the latest full commissioning date of December 1985 remains to be seen. The events of the past eight years are not a good omen.

Ian Welsh

Dear SCRAM

Further to your recent articles about the French nuclear power industry, I read a bit about it in the French newspapers while on holiday.

Electricite de France (EDF), is, as you report, saddled with colossal debts from its absurdly over-ambitious nuclear programme. As a result, it is desperate to sell electricity, and is offering it cheaply to businesses contracting to use less electricity during the winter, when demand is at its peak. Now, as any fool knows, nuclear electricity is most economical when meeting a steady baseload, but finds it difficult to follow surges. A fluctuating load leaves expensive nuclear plant idle. So other consumers are, in effect, paying for EdF's nuclear mistakes by subsidising the off-loading of surplus electricity at a discount to industry.

EdF is also offering cheap electricity to businesses going all-electric, which helps to give electricity an image of being clean, plentiful, modern, cheap...now, where have we heard that before? Businesses are sceptical: EdF has repeatedly promised cheap electricity and not delivered.How can they now hope to keep their promises when their debts are larger than ever, and growing as the franc falls against the dollar? EdF argues that its debts in foreign currency represent only a few percent of the price of electricity, but the wrangles go on.

EdF is not daft. They even managed to negotiate a loan using future electricity production as security - electricity is not an easy thing to repossess! EdF may have built far too much nuclear capacity too expensively, but if they can envisage industry consuming much more and offer it cheaply (which is superficially economical once you've built your plant and have huge debts to fend off), they may yet wriggle off the hook. Conservation and renewable energy go out the window of course - you never see 'save it' stickers in France. But that won't bother Margaret Thatcher, who is known to be keen on copying the French nuclear programme, starting with Sizewell...Is that what we're in for?

Robert Poole
York

(The French government has instructed EdF to increase electricity use by 1990. Over the last year, consumption rose only 1%. Faced with a stagnant economy, EdF are unlikely to achieve the growth required. **Nature, 6 Sept 84.**)

Dear SCRAM

We need a new full time worker from the end of October to replace Irene, who is leaving to have **twins** (we don't do things by half in Cumbria!).

We are naturally looking for a committed person who would take on the work for some time. If anyone knows of anyone who may want to take it on please apply to the address below.

In the first week of October BNFL get taken to court by the DPP - sympathetic messages (!) to: Jake Kelly, BNFL PR Manager, Windscale & Calder Works, Sellafield, West Cumbria.

Jean Emery
CORE
3a Slater Street
Barrow
Cumbria
0229 33851

Dear SCRAM

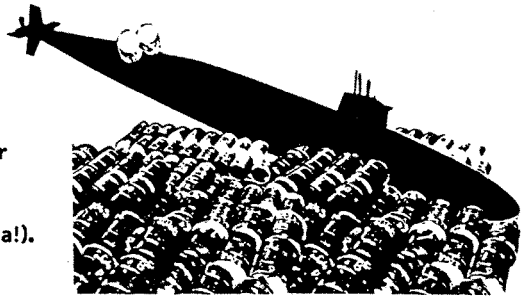
We wish to continue receiving SCRAM and we do use the information contained therein a great deal.

Queensland of course has vast coal reserves. Research too shows that coal can be used to generate electricity much more cheaply and cleanly than nuclear power now that some of the problems of clean coal generation are being solved. Our own miners too feel a kinship with miners in your country.

Uranium mining is a great problem to us here. Not only is it barely economical, but the mines that are working are on the watersheds of river systems prone to massive cyclones. When these cyclones reach full force no one can be sure that any dam will hold. Already in recent flooding water went down the Gilbert River from the settlement ponds at the old abandoned Mary Kathleen mine.

So we are very grateful for the type of work that is undertaken by SCRAM.

F E Smith
Campaign Against Nuclear Power
Queensland
Australia



US Sub rams illicit waste dump

Dear SCRAM

I am writing regarding the report in SCRAM 42 relating to the **Sam Rayburn** incident that occurred 175 miles off the coast of Cornwall 2nd September last.

I read with interest your editorial comment which mentioned that the incident had received wide publicity in such countries as the Soviet Union, West Germany and Canada. You go on to state that there has been no media coverage of the serious incident by the British Press.

In point of fact, the **Daily Express** carried about a third of a column on the subject sometime in March, although the report gave virtually no details (compared to your excellent article), it did state that Greenpeace were going to investigate the matter. It transpires that the **Sunday Independent** ran a lead article after information from Greenpeace. From there, the **Glasgow Herald** ran an item and also the **New Statesman.**

It is a very serious incident indeed, perhaps more importantly for the West Country in terms of the already moribund Cornish fishing industry and the tourist industry, upon which so many people in this part of the world depend for a living, however meagre. The fishing industries of France and the Republic of Ireland should also be considered.

In conclusion, I am trying to run some sort of campaign in the West Country to ensure that the population of this green and pleasant land have answers to enigmas that seem cloaked by the arcane decisions of a so-called government elect which purports to give people 'Freedom and Democracy'. I would therefore appreciate whatever information and/or contacts relating to this incident, and any future incidents relating to the West Country - however great or small.

John Forbes
Exeter.

(Our editorial was referring to take up of **our** story, which we press released. To contact John, please write to SCRAM and we'll pass on any info to him. This issue's 'page 3er' will interest you - Eds.)

Tidal Power~ the case against

Since the Severn Bridge is now seen as having a limited future the debate about the Severn Barrage has been revitalised. The following article has been written by Jane Roberts and Janet Rowe **and concentrates on the energy side of the debate. We welcome any comments on this article and will print all correspondence in the next issue of SCRAM.**

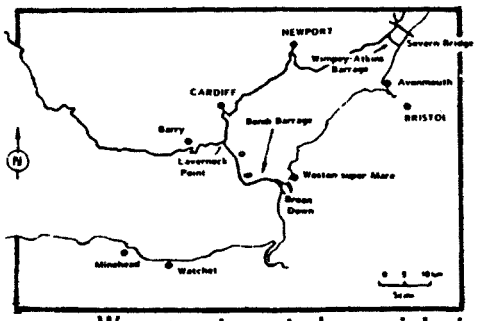
The Severn Estuary has Europe's largest tidal range - 8.8m. This makes it Britain's best bet for tidal energy. The Government's 'Bondi' Committee reported in 1981 on various options, favouring the inner barrage now been pushed as a public enterprise by the Severn Tidal Power Group led by Taylor Woodrow. A scheme incorporating a river crossing was put forward in 1983 by Wimpey-Atkins as a private enterprise (see map and table).

The special habitats of estuaries are rapidly disappearing. The Severn Estuary is of international significance for wintering waders and sheldducks. The birds feed on the intertidal mudflats; and the estuary, its surrounding lowlands and the Bristol Channel form a complex of inter-related habitats, each supporting different bird species. Any changes to this inter-relationship could seriously reduce the bird population.

A barrage would reduce the tidal range behind it; the level would not fall below that of mid-tide, water velocity would be reduced and flow paterns would change shifting the mud flats up to five metres in depth. Already highly polluted, a barrage could adversely affect the dispersal of heavy metals, sewage and other pollutants within the estuary. This could create a serious imbalance in the ecosystem.

During the construction phase enormous amounts of fill and facing will be transported to the area; road and sea traffic will greatly increase, giving rise to more pollution and disturbance. The Bondi barrage will employ 21,000 workers, and the Wimpey-Atkins plan 15,000. Because of the transient nature of such workforces great pressure will be put on local authorities to meet the housing, education and social service commitments during a period of drastic spending cuts. A temporary boom in the local economy will leave the area worse off, as has happened following other large civil construction projects.

Apart from the increased traffic during construction the inclusion of a second crossing will involve eight miles of link roads to the M4 through important land on both sides of the Estuary. A motorway in the Bondi scheme will also lead to substantial development changes.



We must not be misled by the fact that the barrage is a renewable energy source, into automatically accepting it as a good thing; as the foregoing demonstrates the environmental impact of either scheme will be severe. The following deals with the energy aspects of the proposals.

The Severn Barrage is **not** an alternative to nuclear power. Instead a barrage will help decrease the coal-burn and accelerate the programme of pit closures. A proposed 'two basin' scheme could even be used as a pump storage system in conjunction with nuclear power stations to cope with peak demands.

The Bondi scheme would provide 6% of our electricity demand. As nearly 80% of our electricity comes from coal burning, a barrage will contribute little to reducing environmental damage. The cost of installing pollution control equipment has been estimated at £1.2 billion. At £6 billion the Bondi barrage is not a cost effective answer to the acid rain problem, as it would be eliminated by less than 10%.

The cost of the Bondi scheme, diverted to a national insulation programme and an energy efficiency drive, could save more energy than the barrage could produce, with negligible environmental damage. No environmental damage can be justified in order to build more generating stations whilst there is so much overcapacity, and so much scope for reducing demand. It is preferable to burn coal, provided the emmissions are reduced and CHP technology is used, than to barrage the Estuary. Research should be concentrated on the **real** alternatives - wind, wave and above all solar energy - with the aim of replacing coal in the future.

The price of electricity from a barrage is almost entirely dictated by the capital costs, as the fuel costs are zero. Because of the tidal range and the timing of the tidal flow the annual output (in TWh) will be a third of that from an equivalent-sized nuclear plant despite the lower construction cost per Megawatt; the electricity will be more expensive. According to Bondi the (1982) cost of barrage electricity will be 3.1p/kW, compared with 2p for nuclear and over 3p for coal.

However, it is obvious that unforeseen difficulties, industrial action or even incompetence could hold up construction, thereby pushing up the final cost of electricity from the barrage. This does not seem unlikely, given the history of such large projects.

The attractions of a Severn Barrage are only superficial, and are far outweighed by the detrimental effects. Large scale tidal barrages should not form any part of the solution to the problems of nuclear power and acid rain.

	BONDI	WIMPEY-ATKINS
Length of barrage (Km)	17	6
Number of turbines	160	42
Turbine rating (MW)	45	25
Total installed generating capacity (MW)	7,200	1,050
Energy output per annum (TWh)	12.9	2.43
Estimated cost (1983 prices)	£6.035m	£885m
Extra cost of highway & link roads	£89-120m	£60m
Employment during construction	21,000	15,000
Permanent employment	500	not stated
Programme:		
time for pre-construction studies	6 years	3 years
time to full generation	12 years	7.5 years
time to first generation	9 years	6 years

FOSSILS____Brought back to Life !

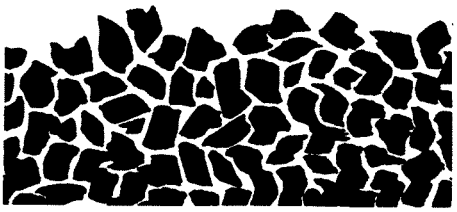
Fossil-fuel burning power stations, reaching the end of their life-times, can be refurbished for only a small percentage of the cost of building a new one, creating considerable opportunities for the future of the coal industry.

A US engineering firm, Foster-Wheeler, had significant economic success recently when they refurbished an old American power station, using ever-improving technology. A new station would have taken seven years to build and would have cost $1,200 to $1,500 per kilowatt output; the rebuilt station was completed within a year, and cost $50 per kilowatt output.

The work is carried out inside the general structure of the plant, basically renewing the life-limiting, worn-out components. This kind of renewal could conceivably create everlasting power stations. Certainly, at the present state of the technology, doubling the station's lifetime is possible. General Electric, main competitors with Foster-Wheeler, refurbished a power station in Texas, which had opened in 1949, and claim to be able to add at least 20 years to the life of a plant.

Apart from the savings in land, resource and money, an important advantage of refurbishing is the comparative ease with which pollutant cleansing technology can be incorporated at the same time. This has particular relevance to the UK, which will have to control emissions of sulphur dioxide and nitrous oxides under growing international pressure. The obvious necessity for such measures could coincide with refurbishment of the many ageing UK power stations built in the 1960's. (Not an argument for delaying action on acid rain NOW, if not before.)

So is anyone in Britain doing anything



about it? Apart from existing knowledge and experience in hydro-plant refurbishment, the UK is well behind the league as usual.

It's hardly surprising, considering the government's attitude to the coal industry generally. Their plans for more nuclear stations are paramount.

However, nuclear stations cannot be refurbished, mainly due to technical difficulties and the great problems of radio-activity, both indicating phenomenal costs. Nuclear energy is already replacing coal. Cockenzie Power Station in East Lothain has a bleak future if Torness Nuclear Power Station comes on stream in 2 years time. The future of the coal industry lies in electricity generation. Committed to nuclear energy and destroying the power of the NUM, this government is hardly likely to be enthusiastic about an idea which gives coal a brighter, cheaper and cleaner future.

Technology 11/7/84

Alternative for Embra

Plans to build a Combined Heat & Power (CHP) scheme in Edinburgh could become a reality in the light of recent developments

The 1982 Atkins Report included Edinburgh in its list of nine recommended cities for CHP. Edinburgh is particularly attractive, as a Lothian Regional Council document states, "Edinburgh is one of the most economic locations for a whole city CHP scheme and has been strongly supported by local interests, official and industrial".

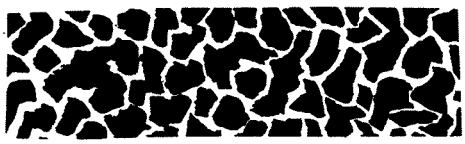
The Scheme would include Cockenzie coal-fired power station feeding hot water to Edinburgh along a network of pipes, supplying homes, offices and factories with cheap heat. One great advantage lies in the profusion of old railway lines along which the pipes can be laid. CHP would be non-polluting, safe and an opportunity to develop and use coal, saving thousands of mining jobs instead of the nuclear union-basher at Torness.

The Government is to provide half the finance for a follow up survey (up to £250,000) for one scheme each in Scotland, England and Ulster; the other half must come from the consortium which must include substantial private interest. The Edinburgh consortium includes the District and Regional Councils, the SSEB and five industrial firms, with Associated Heat Services playing a major role (as it is in some of the other proposed surveys).

Read the next issue of SCRAM for a more detailed report, including the other cities, after the applications have been considered by the Department of Energy.

Electrical Review, 24.8.84, 14.9.84.

The real Plan for Coal



A few environmentalists may be secretly pleased that the government has chosen to hammer the coal industry, in the hope that this will lead to a reduction in acid rain. But, on closer analysis, it soon becomes obvious that the government has not, in fact, changed the three-pronged approach to energy strategy - coal, conservation and nuclear - and current plans to close down mines are nothing more than an attack on organised trades unions, (conservation being the sweetener).

It is difficult to predict exactly how long our reserves of oil and gas will last. However, we do know that they are finite and that we may well reach the end of our of self-sufficiency before the end of the century. Coal is to play a very important part in plans to replace oil and natural gas. This will mean opening new 'super pits', which will be highly mechanised.

The scale of the environmental destruction that we have seen, so far, since the nuclear industry began in this country is nothing compared with government plans to replace oil. The current slump in demand for coal is only temporary, and the government is using the opportunity to break the NUM, so that by the time coal becomes important again they will have a tame workforce.

Plants required for the conversion of coal to oil and gas are giant facilities about the size of an oil refinery, which consume and pollute vast quantities of water. It is estimated that Britain would need 33 such plants to meet its current oil needs, not to mention gas, at a cost of around £60 billion. In fact the cost of building a single 'synfuels' plant is likely to be greater than the stock market value of ICI!

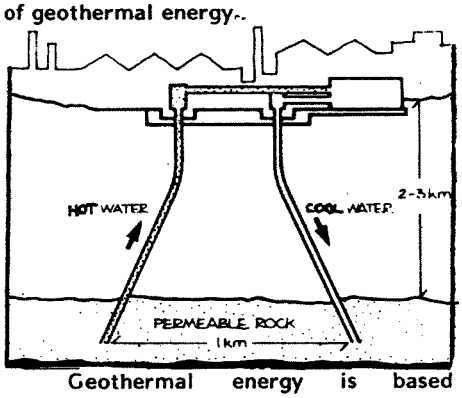
A renewable energy strategy would phase out coal, but very gradually as pits become exhausted. We wouldn't need to open any new pits either, unless our conservation programmes fall behind schedule. It's a strategy which, if promoted in the right way, could well gain more public support than we ever imagined possible.

In the unlikely event of the government succeeding in smashing the NUM, they'll have to come up with a plan to tame the enviromentalists, before we convince too many people that a renewable energy strategy is preferable to the hard energy path they have mapped out for us. Watch out they may be after you next!

Pete Roche

Geothermal Pump

The Weir Group, a Scottish-based company, has designed a new hydraulic pump which is seen as a major breakthrough for the future of geothermal energy.



Geothermal energy is based on pumping super-hot water from deep within the earth to the surface, diverting the heat for electricity generation or for space and water heating. Technical difficulties are mainly due to the design of the pumps. They are susceptible to corrosion from the salts in the water and renewal of the pumps is frequent. The standard pumps are electric and it costs a fortune to retrieve and replace them. Doubts exist as to their durability and efficiency.

Now, however, the Weir pump is hydraulic and is only one tenth of the length of previous ones. A spokesperson commented on their design: "Each pump has shown hardly any corrosion, demonstrating that, in harsh conditions, the pump will last several times as long as any other 'down-hole' pump available".

They have met with great success, exporting units to California for a geothermal power plant and to Abu Dhabi to pump oil. The prospects for expansion and exports are enormous, a pilot scheme near Southampton has proved its worth, supplying district heating for 2,000 hours with no corrosion and no cut in efficiency - unheard of before.

Scotsman, 27.8.84.

Kieldover

The saga of Kielder Dam in Northumberland changes course at the end of Septmber, when the scheme will start feeding electricity into the national grid. The dam, which stores 200,000 megalitres of water is one of the biggest artificial lakes in the world. It was originally built by the Northumbrian Water Authority, with no plans for electricity production; instead it was to meet the forecasted rising demands for water. Demand, however, is much less than expected, and aside from the environmental damage of the water level, it has been referred to as the Big White Elephant of the North, with interest charges absorbing nearly half of its revenue.

The NWA and the CEGB have installed two turbines at the clost of £6.3 million, with a generating capacity of 6MW. The hydro scheme is expected to raise about £900,000 p.a. to be shared by the NWA and the CEGB. The benefits to the rest of us are less clear - the vast ecological damage caused by an unnecessarily large reservoir has now been compounded by construction of a new 33kv power line, 24 km of which runs on overhead pylons, connecting the scheme to the national grid.

Electrical Review 24 Aug 1984
Financial Times 18th Sept 1984

North East Wind

Northumbrian Energy Workshop is a co-operative, based in Hexham, which specialises in wind energy equipment. They have recently developed a wind energy system for export to Mongolia, to be used by nomadic herders to supply their circular 'yurts' with electricty for radio, lighting and electric fences.

Geoff Watson, the technical director, visited Mongolia in September 1982. The Northumbrian Energy Workshop then designed the windmill specifically for Mongolian conditions. Most of the tower structure and windmills can be manufactured locally. The Mongolians will need about 20,000 systems over the 10 years.

The co-op has seven full-time employees and has built up a world-wide reputation. They are dealing with projects in Taiwan, China, Fiji and Nigeria as well as all over the UK. They have never manufactured a specific windmill, always preferring to collaborate with manufacturers equipped to produce a certain size of wind machine suitable for a specific application.

They import equipment from various countries where they would be best for the customer. But the Mongolians will be receiving almost exclusively British designed and built equipment. The electronic controller, for example, was developed at the National Centre for Alternative Technology at Machynlleth.

ICOM N/L Sept 83

The Urban Transportation of Irradiated Fuel. Ed. John Surrey. (Macmillan Press,£5.95, 336pp)

This book is the outcome of an international conference sponsored by the Greater London Council which was held in April 1983. The conference was organised by a private consultancy on behalf of the GLC. They attempted to recruit speakers with a wide range of views to make the conference as unbiassed as possible. However, as the CEGB refused to appear, delegates were unable to question their safety procedures. Even so, the majority of speakers were generally in support of the status quo in the nuclear industry.

Lord Flowers opened the conference by asking delegates to ignore more general issues such as the need for nuclear power, and spoke of the need to reassure the public. This, he felt, could be achieved by the Government's appointing an independent team of expert assessors. Des Wilson of Friends of the Earth took the opposite point of view and stated: "We are wrongly transporting the wrong product in order to implement the wrong policy for the wrong reasons." He goes on to describe very succinctly the arguments against nuclear power and the alternative options open to us. His paper is, in fact, a very useful summary of the anti-nuclear case, but rather out of place in this book.

David Pearce talked about planning issues in relation to waste transport, and suggested that there should be a planning inquiry commission to sort out the general issues, but only if public concern warrants it. He misses what is surely a very important point for a planner:- Why do electricity boards insist on applying for permission for power stations on a piecemeal basis? why can't they apply for pylon routes, workcamps, railheads, railroutes, and so on, all at the same time as the power station?

Fred Millar, in one of the most useful papers, pointed out that there have emerged enough credible safety problems with the US spent fuel casks for the nuclear industry's assurances to be more and more frequently disbelieved. There isn't even any need to transport nuclear waste in the US. They have no reprocessing, and on-site dry cask storage can be built before space in the storage ponds runs out.

Marvin Resnikoff of the Independent Council on Economic Priorities brought another note of scepticism to the conference. The Council believes that the transport of irradiated fuel as currently practised in the US is unsafe. They do not believe that the casks are designed well enough to withstand realistic highway or rail accidents.

Other papers dealt with the Potential Consequences of Accidents (by the National Radiological Protection Board), Design and Safety of Flasks (research funded by the US Department of Energy), a general description of Fire Tests and so on.

While some of the papers are interesting, overall the book is a disappointment. It's a pity that the GLC didn't see fit to organise this conference themselves - they would probably have done a better job. At £5.95 this book is not worth buying and it is often tediously boring. If you are gathering information on nuclear waste transport, and need pointers to research, or simply to questions which need to be answered, then I think that "The Next Nuclear Gamble" by Marvin Resnikoff is far more useful.

Pete Roche

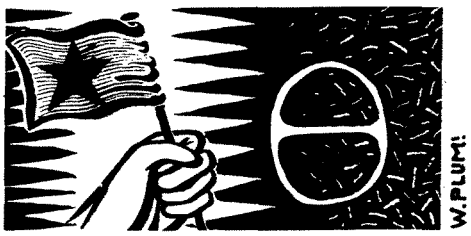
From Red to Green: Interviews with the New Left Review by Rudolf Bahro (Verso, £5.95.)

The first half of **From Red to Green** deals with Bahro's life in East Germany. He was a Party member who was imprisoned after writing **The Alternative in Eastern Europe**, not for its dullness, length, and Marxist jargon, which would have been grounds enough, but for its message, which is that from a Marxist point of view a state-controlled society is as alienating as a capitalist one if both are run by and for industry. Bahro calls himself 'naive', and though intellectuals in Eastern Europe have to be fairly Strasse-wise, he does have a particular and honourable kind of intellectual's naivety - he won't shut up, even when he's speaking to State Security agents, and he won't stop pointing out that people's behaviour is inconsistent with their principles, and then be surprised when they get annoyed. He was reasonably treated in prison, for since the Helsinki conference, political prisoners have had better conditions, and after some pressure from West Germany, was released and sent there.He gave a speech at the founding of the Green party at Offenbach in 1979, where he called for socialists, Christians, and ecologists to come together for human emancipation. If the Greens had such a thing, he would be their intellectual spokesman, and he is regarded as such by the media.

In the second part of **From Red to Green**, he talks about his ideas, which is when you get the feeling that he and his traditional Left questioners are from two different worlds:-

NLR: It can be scientifically shown that the eight billion people you talk about could reach a higher standard of living than that of the Poles today.
Bahro: But how long could they keep it up?

Bahro no longer has the faith in science with its smooth glittering Futures, which are easier to imagine than the details of the next hundred years or so. However, although he has denounced 'Marx's hymn to bourgeois industrialism', and become much more readable in the process, he still has that Marxist holism, that desire for everything or nothing, and he is still backing world-history, but now it's the outsider ridden by Ecology; class conflict has taken a tumble. This gives him an inspiring urgency, but also a sense that he is hyper-jumping from one dogma to another. He is fiery and abstract, unlike such earthy radicals as E P Thompson, who inherits a radical tradition (Blake, Morris, Cobbett, even Orwell) which always gives the



specific detail of ugliness or want. They hated the inhuman, stunting, 'industrial' as well as the unjust and exploiting 'capitalism'. Their kind of anti-industrialism should inspire those following it with a sense that any new technology is guilty until proven innocent.

But Bahro has to turn it into a religion.And perhaps that's the only force strong enough to combat technology's power.But his early Christian parallels, of an empire utterly changed by the new religion calls to mind the persecutions and the loss of the best of paganism.And the last crowd to destroy 'the world of greed and machines' as they called it were the Khmer Rouge, who got rid of every hospital, telephone and a quarter of the population of Kampuchea.Then again, anti-industrialism might be an idea whose time has come, but ideas don't cross borders as readily as duty-free gadgets and weapons. Iran puts its women into

veils in a bid to root out Western satanism, but keeps Western missiles and planes.

Still, for anyone wanting to pick up on the Red to Green debate, this is a good introduction, along with Bahro's **Socialism and Survival** and **Exterminism and the Cold War**, which includes essays by him and E P Thompson. Ecologists should have a good time, if they weren't too nice, saying "we told you so" to all those leftists who told them they were bourgeois romantics.

R M Bell

Acid Rain by Steve Elsworth, (Pluto Press, £3.95, 154pp)

Acid Rain is a book long overdue, not only in explaining clearly the often complex events leading up to the consequences of various pollutants, but more importantly, in emphatically ridiculing the pig-headed position

of the UK govt and their fellow heel-draggers, the CEGB.

The position of "research before action" on reducing emissions of SO_2 is treated as laughable by concerned citizens, foreign governments and scientists. As the Canadian Minister for the Environment said about countries who prefer the British mode of inactivity:-**It's a bit like saying it looks like a skunk, it walks like a skunk and it's stinking the house up like a skunk, but we are not prepared to commit ourselves that it is a skunk without four more years of research!**

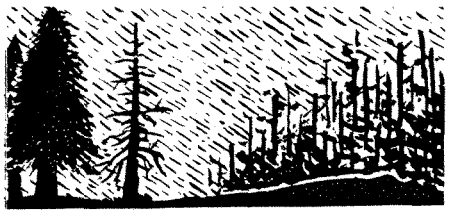
Elsworth examines in detail many of the CEGB arguments for delays, unearthing the hidden implications. He outlines the history of research, effects and emission control throughout the world, and shows that acid rain is not a new problem emerging out of the blue, as the CEGB would like us to believe, but one which has been with us since mass industrialisation. Indeed, 1306 A.D. is the date of the oldest known complaint of sulphurous fumes from fossil-fuels, and so far no less than 3,000 studies have been conducted.

After a chapter which describes acidification throughout the world, from Australia to the Arctic, it becomes obvious that acid rain is most definitely an international environmental crisis demanding international action, particularly by Britain because of its geographical position and because it exports much of its air pollution. England, Scotland and Wales suffer increasing damage from rain as acidic as that in Scandanavia.

The section on the existing technology to attain clean air goes into more detail than most reports, showing the efficiency of various methods and possibilities for the future.

However, the most important point Elsworth deals with is the economic weapon the government and the CEGB use. They can give costs for desulphurisation, but costs of damage to buildings, crops, lakes, forests, etc. are much harder to quantify, a position extensively exploited by the CEGB in its figures for domestic UK consumption. The reality of the economics is put well by the Head of the Organisation for Economic Co-operation and Development:-

"Acid rain is a good example of a problem that is fairly well understood and for which the technology of control, in the sense of a reduction of emissions, exists. The main issue is **not really** the balance between costs and benefits of control, although it is often so represented. The **principal** source of controversy is **who** should bear the environmental costs associated with coal



burning, and **how** and **when** these costs should be borne.
The point is that **the costs will be borne: they cannot be avoided.** (original emphasis)

The book is full of snippets like this from a wide range of people. It is easy to read (relief) and it leaves you with the feeling that some things need doing, not least of which is the wide dispersal of this book. Read it.

George Baxter

From Black to Green

A group of people, some of whom are involved with **Green-Line**, the magazine of the green movement, and others who were involved with **Freedom**, the anarchist monthly, recently came together to produce **Green Anarchist** magazine.

The first page explains that anarchism and ecology have similar traditions and aspirations, and that our "exploitive [sic] society results in the decimation of natural resources as well as the exploitation of people."

It then states (excuse the pun) that "although the possibilities of self-destruction are immense, so are the possibilities of creating a satisfying, free and reasonably fed world, through a rational approach to agriculture, transport and production," controlled by people, not by bureaucracies.

The rest of the magazine consists of news, articles slanted towards the Third World, economics and land reform, reviews, and even a recipe.

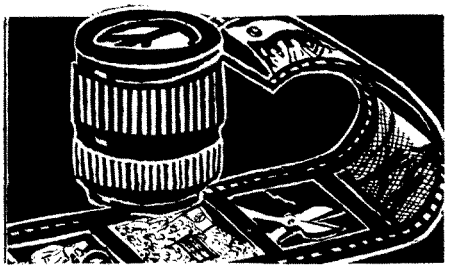
Green Anarchist is a refreshing change from most anarchist periodicals which concentrate on heaping scorn on anyone who doesn't conform to their narrow viewpoint. The first issues shows that is has the potential of becoming a forum for ideas on how an anarchist and ecological society would work, and how it could be achieved.

(Subscription: £4 for 10 issues. Subscriptions and articles, news, photos etc to 68a Cassiobury Park Avenue, Watford Herts. WD1 7LE. Available from the Smiling Sun Shop, 11 Forth Street, Edinburgh)

Andy Watson

Peace Moves: Nuclear Protest in the 1980's by Ed Barber. (Chatto & Windus, £4.95, 66pp)

Peace Moves is a photo book that attempts to show the public the nuclear protester up against the perimeter fence. The 66 black and white



photographs are all shot around Greenham Common; alas, there is no coverage of the many bases in Scotland. The photographs are well chosen by an obviously experienced photo-journalist, and cover what the media has tended not to see. They are all to the point, all have some message to tell, and include pictures of celebrities such as Annajoy David and Bruce Kent. Book presentation, printing and binding are all good, and make good value for money at £4.95 softback.

Nic Janusewicz

Diary

October

5-7 Blacksmithing: A practical course for beginners and those with little previous experience. The course will cover basic forging techniques and an introduction to casting and sanding. Centre for Alternative Technology, Machynlleth, Powys, Wales. Tel. 0654 2400

5-14 Liverpool Peace Festival '84: Details: Peace Festival, c/o Peace Shop, 91 Whitechapel, Liverpool 16 Tel. 051 236 0748

6-7 Christian CND Annual Conference. Contact : 01 263 0977

8 SCRAM talk: 'The link between civil nuclear power and nuclear weapons' at Edinburgh CND General Meeting, 11, St. Colme Street. 7.30pm

10 SPOKES Meeting: The Lothian Cycle Campaign. Contact: 225 6906

20 Faslane Peace Camp Fair: Victoria Hall, Helensburgh 9.30 till late. Speaker - Joan Ruddock. Contact: Iain MacDonald 0436 289719

20 Molesworth - Bread not Bombs Demo Contact:'Molesworth wheat to the starving' Campaign, Peace Corner, Old Weston Road, Brington, near Huntingdon, Cambs. PE17

23 Torness Public Inquiry - Transport of Nuclear Waste (SSEB v East Lothian District Council) Contact: SCRAM 031 557 4283

21-27 CND Week of Action

27 National CND Demo: Barrow-in-Furness **STOP TRIDENT.** Contact: CND, 11 Goodwin St. London 01 263 0977. Edinburgh buses leave 9am. Contact: 031 336 3894 or 669 6141

26-28 Biofuels: The theory and practice of three technologies: biogas, woodgas, woodheat. Centre for Alternative Technology, Machynlleth, Powys, Wales. Tel. 0654 2400

November

1-30 TURN THE TIDE. A month of action at Faslane to Turn the Tide on Trident. Contact: Faslane Peace Camp, below St. Andrews School, near Helensburgh, Dumbartonshire.

7 SANA Public Meeting Speaker - Prof. Earlick(SANA & EDC): Assembly Rooms, George Street, Edinburgh 7.30pm

10 Schumacher Memorial Lectures 1984 Lectures on principles in architecture, ecological development in Ladakh and the Sarvodaya Village Development Movement in Sri Lanka. Advance tickets: Schumacher Society, Ford House, Hartland, Bideford, Devon. Tel. 02374 293 or Greenleaf Bookshop, 82 Colston St. Bristol. Tel. 0272 211369

11 SPOKES Meeting Contact: 031 225 6906

9-11 Waterpower: Low power hydro-electric installations for people intending to install a system on a commercial or DIY basis, and all those interested. Centre for Alternative Technology, Machynlleth, Powys, Wales. Tel. 0654 2400

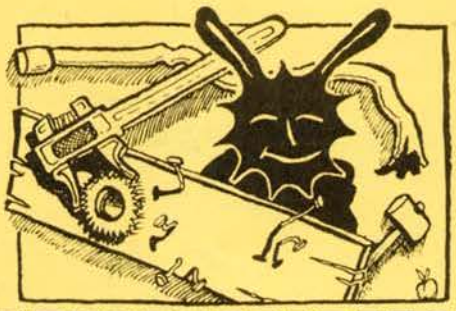
16-21 Woodland Management(including hedging): Small scale tree growing & the use of wood for fuel and timber, including rejuvenating woodland, propagation, grants, advisory bodies. Centre for Alternative Technology, Machynlleth, Powys, Wales. Tel. 0654 2400

On a visit to the Torness construction site recently Little Black Rabbit heard rumours of an interesting new approach to industrial relations. It sounded so innovative it had to be seen to be believed. Comfortably provisioned in the Torness Rabbit Warren Little Black Rabbit awaited proof.

Towards the end of a contract the workers, knowing their employment was coming to an end, started to slow up and make more deliberate mistakes in order to extend the contract. Our intrepid reporter realised that this practice could result in serious problems if the reactors ever started up (as at Heysham). Fortunately the site management also twigged, but how soon?

The whole workforce was paid off before the end of the contract (with a handy bonus too!) and local contractors were taken on to complete the job. Then once the job was finished, another contract started. The team for the new contract was virtually the same as for the previous one!

So all the talk of not employing local labour on site seems to be false - they are employed but as 'part time' short contract employees. If they can manage to complete the contract properly when the usual team cannot, why are local workers not employed permanently on the construction?



Little Black Rabbit

SUBSCRIPTION FORM

SCRAM Journal annual subscription rate

Sub for six issues	£7
Overseas	£9 money order
Institutions	£12
Supporting sub	£10 return to
Life sub	£50 SCRAM, 11 Forth St.
Household sub	£30 EDINBURGH 1 3LE

YES, I/We wish to subscribe -

Name .....

Address .....

.....

.....Tel No. .....

Community Communications is a collective at present involved in making tapes with the people at the Royal Blind School, Edinburgh.

We are also aiming to make tapes of the SCRAM Journal, Peace News and some Greenpeace publications.

We desperately need people with ideas and relevant technical skills.

Please get in touch with us at:
Community Communications
11 Forth Street
Edinburgh 1

WINDSCALE

History

In 1946 work started on two atomic piles at Windscale, the former ordnance factory in Cumbria, under the auspices of the Division of Atomic Energy at the Ministry of Supply. This followed the 1945 decision by the British government to produce atomic weapons. The two gas graphite reactors went 'critical' in 1950 and the now infamous reprocessing plant was under construction. In 1952 the first British Bomb was exploded and a hydrogen Bomb followed in 1957.

The Magnox reactors were built at Calder Hall, adjacent to Windscale, in 1956. This supplemented the plutonium production of the piles. The name 'Magnox' came from the magnesium alloy used for the fuel rods. The reactors were scaled up for the first generation of nuclear power stations. After the 1957 fire, Calder Hall became the only UK source of plutonium.

The second nuclear reactor programme, the Advanced Gas-cooled Reactors (AGR), also started at Windscale where the prototype was built. It was developed from the Magnox design and was hoped to make nuclear power competitive with coal. The AGR's are a commercial catastrophe; the lead station, Dungeness B, was 12 years late and, in 1984, is still not fully commissioned.

In 1954 the plant was transferred to the UK Atomic Energy Authority and, following the 1971 Atomic Energy Act, ownership passed to the newly created British Nuclear Fuels Limited (BNFL). Sellafield appeared in 1981 when BNFL changed the plant's name in an attempt to dissociate the facility from its well-deserved reputation.

At present plans exist for a new plant, the Thermal Oxide Reprocessing Plant (THORP), to deal with AGR and foreign Light Water Reactor (LWR) spent fuel. To date this material has been stored on site in huge cooling ponds; a tempting target for terrorists and a serious liability in the event of war, whether conventional or nuclear. Also planned is a vitrification plant for the solidification of high level nuclear wastes.

Accidents

More than 300 accidents of "reportable significance" have occurred at the Windscale site. Most were restricted to "on-site" incidents: workers receiving exposures exceeding international limits, malfunctions of machinery, and various spillages and "minor" fires. Several incidents deserve special mention:

1955 The works manager, who subsequently died of Multiple Myeloma, led a team to work on a reactor face to avert a catastrophe. Although "potentially very serious", not revealed for a year.

1957 The "Windscale fire". 20,000 curies of Iodine-137 released from the number one plutonium-producing pile. **Two million litres** of milk poured away and between 250 and 2500 cancers, 12 to 250 fatal, produced.

1976 A leak of radioactive water from a silo reported to the Energy Secretary **one month after its discovery.** It is still leaking.

1978 Contaminated clay discovered from a leak years earlier; 100,000 curies of radioactive strontium and caesium had leached into the subsoil.

1981 An attempt to reprocess insufficiently-cooled fuel rods released Iodine137. Milk found to contain **2500 times** the normal level of contamination; BNFL pronounced it **"perfectly safe to drink".**

1983 Purex solvent and crud released into the Irish Sea. Greenpeace divers contaminated and 25 miles of beach closed off. BNFL to be prosecuted for this accident.

BNFL constantly claim to have a good safety record yet all of the accidents are inherently similar, a result of inadequate operating instructions, instrumentation, monitoring and emergency planning compounded by personnel error.

Windscale is the 'dirtiest' reprocessing plant bar none. **It is killing people.**

Windscale

The Site & Employment

The Windscale and Calderhall complex comprises four 50MW Magnox reactors, a small AGR (now defunct) and the reprocessing facility which dominates the site. The reprocessing plant operates around the clock, day in day out, stopping only for the annual shut-down.

Two to three shipments of spent fuel arrive each day, of four or five flasks. The origin varies: coming from UK Magnox and AGR nuclear power stations, UK military establishments, from Europe, via east coast ports, and from Japan via Barrow docks.

The spent Magnox fuel rods are stored for a period to 'cool down' before reprocessing. The AGR, and much of the foreign spent fuel cannot yet be dealt with and is stored at Windscale in huge tanks - a risk to which Cumbrians are exposed in the 'national interest'.

The local economic 'importance' of Windscale is enormous. BNFL is the biggest single employer in what has always been an economic blackspot. Out of a county population of 500,000, about 7,000 people work at Windscale and 12,000 in Barrow shipyard (soon to build Trident). The nuclearrelated work at these two sites comprises the biggest capital investment in Europe. This investment supports many off-site jobs from direct equipment suppliers to local shops and pubs.

If reprocessing ceased there would still be work at the plant; essential maintenance, waste management and decommissioning. That a whole community is so dependent on one industry is frightening. One **on-site** accident would destroy the whole economy of the area.

Reprocessing

All nuclear power stations require fuel to be removed regularly because the build up of fission products reduces the efficiency of the reactor. The spent fuel is transported by rail to Windscale in flasks after an initial cooling-off period at the stations.

After a further storage period, the Magnox fuel rods are reprocessed; the fuel cladding is stripped away and the unburnt uranium and the plutonium is reclaimed. Reprocessing is only undertaken to reclaim the plutonium; unburnt uranium has never been reused as nuclear power station fuel and is not commercially attractive.

The fuel cladding is classified as "intermediate level" waste intented for burial at Billingham in Clevelend, in ICI's disused anhydrite mine. Water used in the reprocessing is discharged into the Irish Sea as "low level" waste. The remaining fission products are "high level" waste and are stored at Windscale awaiting the discovery of a technique for safe disposal.

The storage of Magnox fuel under water is unsatisfactory because the magnesium alloy corrodes. An alternative system exists, although the industry prefers to ignore it; dry storage in gas cooled warehouses. This is presently being used at Wylfa nuclear power station on Anglesey. This would get around the need to reprocess Magnox fuel. We could also cease transporting highly radioactive spent fuel flasks through our towns and cities and the rods could be stored at power stations. The sea discharges from Windscale would then be unnecessary.

Effects on Health

In Cumbria many people have a gut reaction to what they believe is the cause of widespread ill health, Windscale. Those who lived here when it was a clean rural area have watched the incidence of cancer increase.

Children in East Cumbria still enjoy a cancer rate 25% below the national average whilst in the West the rate is 25% **above.**

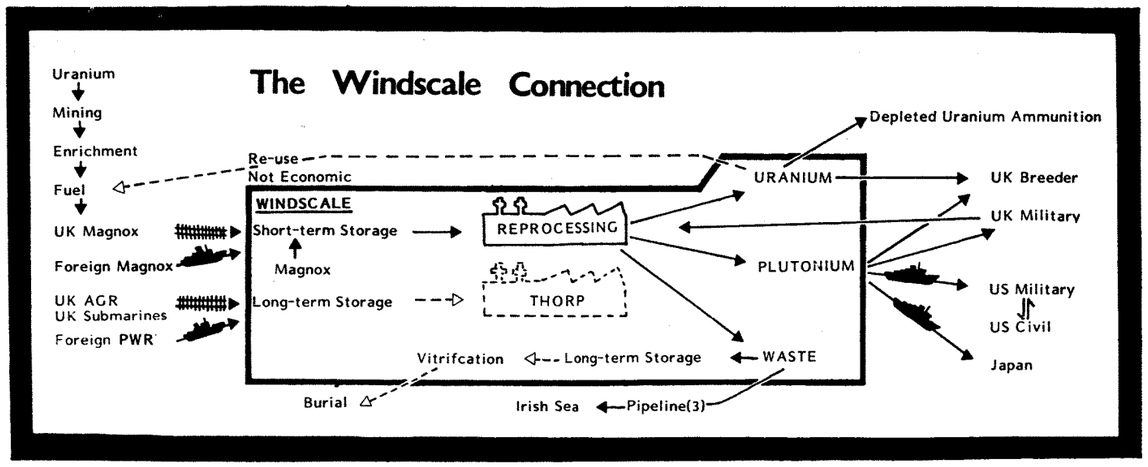
The sea discharges alone (ie. excluding all the accidents and aerial emmissions) cause 2-3 cancer deaths each year, 2-3 nonfatal cancers and 2-3 genetic defects for each year's output from the pipeline. This is based on the most optimistic dose models, and is accepted by BNFL.

The two diseases which establish the impact of Windscale on health and the environment are **multiple myeloma** and **childhood leukaemia**, both are extremely rare and are known to be radiation induced. Studies undertaken in south west Cumbria show that multiple myeloma rates are equalled only in Hiroshima and Nagasaki. This disease is a consequence of plutonium contamination.

Sir Douglas Black's report confirms the findings made public by Yorkshire Television in the documentary 'Windscale - the Nuclear Laundry'. Childhood leukaemia is **ten times** the national average in Seascale (the closest village to Windscale) and **five times** higher in Waberthwaite and Bootle.

Black also accepted that the only known cause of childhood leukaemia is radiation. These are not the only diseases suffered by the people of Cumbria, and further afield, as a result of Windscale's operations. **Heart disease, diabetes, brain tumours** and signs of premature aging may result from low level doses of radiation over a long period of time.

What is of major concern is the genetic consequences of Windscale's operations, which could take generations to appear. It is already too late for many families.



Radioactive Discharges

Every day **2.2 million gallons** of radioactive waste water are discharged into the Irish Sea in what has been admitted to be a **CONTROLLED EXPERIMENT.** The Irish Sea is now the **most radioactive sea in the world.** Despite a wealth of scientific material showing the impact on health, these discharges continue.

The widely publicised accident in November 1983 forced the government to initiate an inquiry under Sir Douglas Black. Between **'1,500 and 4,500 curies'** of radioactivity, predominately Ruthenium 106, were discharged and formed a highly radioactive slick of Purex solution and crud. Had Greenpeace volunteers not been in the area at the time the accident would almost certainly have been hushed up.

As this washing-out procedure is performed annually; has this previously resulted in the contamination of fishing vessels, nets and beaches? Greenpeace submits that the closure of 25 miles of beach was not linked purely with the accident; the Department of the Environment took the opportunity to close the beaches to avoid public exposure to the 'normal' levels of radiation to be found any day on Cumbrian beaches. The beaches were opened after heavy pressure from the tourist industry which faced collapse and against the advice of the Ministry of Agriculture, Fisheries and Food.

The currents sweep the radioactive contamination slowly northwards, the waste stream eddies around northern Scotland and then sweeps into the North Sea reaching the Scandanavian coast. Even Soviet and Arctic waters contain radioactivity traceable to Windscale. 75% of the man-made radiation dose received by Scandanavians originates from Windscale.

The effect of Windscale on other European countries made the June 1984 meeting of the International Watchdog, the Paris Commission, the most important ever. The Nordic Bloc presented a resolution calling for the introduction of the 'best available technology' to **minimise** sea discharges from all existing and future reprocessing plants. BNFL attempted to pre-empt the Paris Commission in a statement issued on the 7th June: they would carry out a 'high level' study to reach as **'close to zero discharges as possible'.** The UK therefore had to support the Nordic resolution. However BNFL foresaw a ten year programme of gradual reduction **BASED ON COST/BENEFIT ANALYSES.**

Last year BNFL discharged about **400 curies** of alpha emitters annually through the Windscale pipeline. Japan discharges **less than ONE curie**, France **NINETY curies**, the USA's Hanford Military no. 1 plant **less than ONE curie in the last five years**, and Hanford no. 2, when complete, will employ a totally closed system - **ZERO discharges!**

Home & Abroad

A country can choose to develop reprocessing for one of three reasons: **Military, Commercial** and **Research & Development.**

All the countries with nuclear weapons have military reprocessing facilities: Britain, France, USA, USSR and China.

Only two countries operate commercial facilities: **Britain** at Windscale and **France** at La Hague. These plants reprocess spent fuel for both their own electricity boards and for foreign customers. BNFL has contracts with **Japan, Switzerland, Spain, Sweden, Holland and West Germany**, boasting an overseas order-book worth £2,700 million.

Ten countries have, or are building, pilot plants as a part of their R&D efforts: **Argentina, Belgium, Brazil, India, Italy, Israel, Japan, Pakistan, Spain and West Germany.**

R&D is often a cover for military activities. The Argentine plant, for instance, will provide enough plutonium for 10 bombs a year.

The reprocessing business of Britain and France is used to justify the spread of reprocessing technology by Countries with military ambitions. Thus if the link with Britain's own bombs was broken, Windscale would continue to fuel the arms race by legitamising ambiguous civil/military activities.

Bombs for Britain...

Every nuclear bomb, depth charge or Chevaline warhead in Britain's armoury contains plutonium from Windscale.

The Calderhall reactors were originally designed to provide weapons-grade plutonium. Four similar reactors were later built at Chapelcross near Dumfries.

Impurities progressively accumulate with radioactive decay reducing the reliability of nuclear weapons. They are reprocessed in an operation similar to reprocessing spent fuel. The 1977 Windscale Inquiry revealed that this was done at Windscale. The Inquiry was told that certain types of radioactive pollution, including $^{2}/_{3}$ of the plutonium, derived from the treatment of "aged plutonium". Details were said to be classified.

Used fuel from the reactors which power Britain's four Polaris and twelve hunter-killer submarines is stored at Windscale.

...and for America

Windscale has contributed plutonium to the US nuclear stockpile, including material from civil nuclear power stations.

In 1958 and 1959 Britain and the US signed agreements for cooperation in the military use of nuclear energy. Britain has sent an estimated 6.5 tonnes (enough for 1000 warheads) to the US, in exchange for "highly enriched" uranium - for warheads and nuclear submarine fuel - and tritium for H-bombs.

Geoffrey Pattie, a defence Minister, recently told Parliament: **"The US has been free to put this material to such uses as it has decided".** This trade has continued over the last 13 years. Some of the material came from the military reactors at Calderhall and Chapelcross but, between 1964 and 1971, approximately 4 tonnes of plutonium from civil reactors were involved in the trade.

Successive British governments have accepted assurances from US governments that the plutonium would not be used in weapons. However, Reagan's nuclear arms expansion has run into a plutonium shortage led to them reclaiming part of the stockpile "on loan" to the fast reactor programme including Britain's civil material.

Windscale exists to provide plutonium for nuclear weapons . . . . . The uranium extracted by reprocessing has never been reused as nuclear power station fuel.

The campaign against Windscale followed the 1977 Public Inquiry which gave approval for the THORP facility. THORP's completion would ensure Windscale's long term future.

In 1978 Greenpeace decided to expose the dangers of spent fuel transport by sea. This inevitably focused on Barrow, the entry point for Japanese spent fuel. A series of actions were undertaken in 1980 against the **Fisher Line** vessels that carry the spent fuel. Greenpeace dinghies were crushed against the quayside by incoming ships and the courts intervened, imposing an injunction and an £800 fine for contempt of court. Similar actions in France led to arrests, fines and, on one notable occasion, a stun grenade attack on a Greenpeace vessel!

The government and the Windscale management have consistently refused to acknowledge that any health risk attends the plant's operation. Therefore, in the summer of 1983 drastic action was felt necessary; the decision to seal the pipeline was taken. The first attempt was pre-empted by BNFL who had altered the mouth of the discharge pipe. Further action was curtailed by a High Court injunction, an unprecedented £36,000 fine and the threat that Greenpeace funds would be sequestrated.

Amid this legal flack the notorious purex slick appeared, contaminating a party of Greenpeace volunteers. This leak, for which BNFL are now being prosecuted, added momentum to the campaign which was then directed at the Paris Commission.

Eire and the Nordic Nations were already concerned about Windscale's discharges and, prompted by Greenpeace, pressured the UK. Meanwhile Netherlands Greenpeace, not bound by the High Court injunction, threatened to seal the pipeline if the UK did not accept the Nordic 'zero discharge' proposal. The compromise 'ten year reduction' plan is not acceptable; Greenpeace has given BNFL two years to attain **zero** discharges.

Stung by Yorkshire TV's documentary Sir Douglas Black was commissioned by the government to consider the high childhood leukaemia incidence allegations. He found the allegations correct but hedged on the cause. In Parliament Dale Campbell-Savours, backed by a record 230 other MP's, pushed through a Ten Minute Bill. Ten leading Irish trades unions wrote to the Times demanding an immediate cessation of discharges and the shipment of spent fuel.

Cumbria's economic dependence on Windscale necessitates the restructuring of local employment once Windscale is closed. Greenpeace, in assocation with other interested parties, is convinced that capital investment could generate new heavy industry and actually **increase** job prospects. A Report is being prepared. A new era of discussion between the environmental movement and the trades unions is dawning.

An agreement to stop the transport of spent fuel to Windscale would signal the end for the Magnox nuclear stations which are due for closure soon anyway. Storage of AGR spent fuel at the power stations is technically feasible and with the subsequent closure of this second generation of nuclear power stations Britain could become nuclear free.

The battle has not yet been won, but Windscale's operation is become increasingly embarassing for the government and unacceptable for the public. The opposition is gathering momentum. Jim Slater of the National Union of Seamen described this as the 'unique alliance'.

photos from Greenpeace

This broadsheet was prepared for the anti-Windscale campaign by:
Cumbrians Opposed to a Radioactive Environment (CORE), 3a Slater Street, Barrow. 0229 33851
Greenpeace, 36 Graham Street, London N1. 01 251 3020
Scottish Campaign to Resist the Atomic Menace (SCRAM), 11 Forth Street, Edinburgh 1.
Jos Gallacher, Lancaster University Politics Dept.

Other useful addresses:
BNFL, Risley, Warrington, Cheshire. 0940 28333 (Windscale)
CND, 11 Goodwin Street, London N4. 01 263 0977
Scottish CND, 420 Sauchiehall Street, Glasgow 2. 041 331 2878
Friends of the Earth (FoE), 377 City Road, London EC1. 01 837 0731
Scottish FoE, 53 George IV Bridge, Edinburgh 1. 031 225 6906

Useful publications:
Peace News, 8 Elm Avenue, Nottingham. 0602 503587
Sanity, 14-16 Farringdon Lane, London EC1. 01 253 2001
SCRAM Journal, 11 Forth Street, Edinburgh 1. 031 557 5283
Sizewell Reactions, 2 St. Helens Street, Ipswich, Suffolk. 0473 214308

The Irish Sea is the most heavily radioactive in the World.

October 1984