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RESISTER

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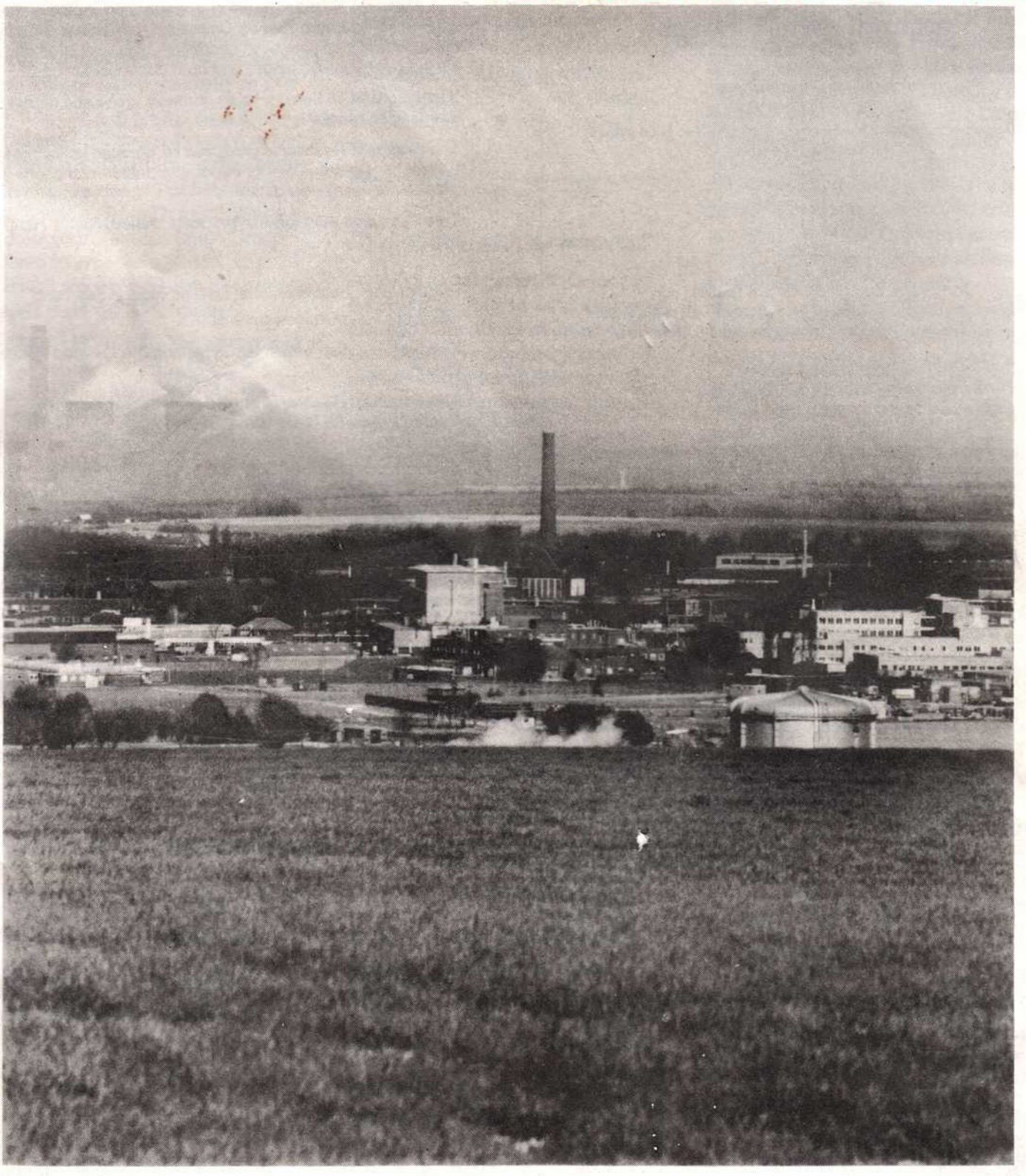


all the news they ignore

UKAEA Harwell...

After much pressure, the two materials testing reactors at UKAEA Harwell closed on March 31 this year. According to the Harwell management the reason for the closure of these reactors is purely a matter of economics, not safety. This is not accurate representation of the entire story.

DIDO and PLUTO

The materials testing reactors at Harwell, called DIDO and PLUTO, were constructed in 1956 and 57 respectively. Safety at the site was not regulated by the Nuclear Installations Inspectorate. Due to the exemption the UKAEA possessed under the Atomic Energy Acts, safety of all the nuclear plant was regulated from within the AEA itself by a safety committee comprising mainly Harwell employees and employed consultants. Over a period of time this led to a slow deterioration in the condition of the reactors.

During the 70's the reactors had little investment to keep them up to standard. Operator doses were very high, with quite often more than 30-40 people a year exceeding a dose of 15mSv per year. The Gardner Report which recently found a link between nuclear weapons and types of cancer in their children found that the threshold dose was around 10mSv. Many proposals for improving safety and reducing operator doses were made, but these were dropped due to lack of funds.

The whole history of these reactors is one of short-cuts and under investment in safety systems.

Reactor Experiments

Both reactors use highly pressurised, high temperature experiments in the core. Considering that the reactors were not constructed as pressure vessels, and did not have a backup emergency shutdown system, the consequences of failure of one of these pressurised loops could have been very serious. But again, the production and approval of safety cases for each of these experiments was regulated internally, and so many of the experiments did not have to meet engineering standards required elsewhere in the nuclear industry. The two experiments which gave the greatest cause for concern were two experimental loops used for testing reactor fuel rods.

One of the loops was in the DIDO reactor. This experiment, known as the DIDO Water Loop, was use to test Polaris submarine fuel rods. It simulated the high pressure/ temperature conditions inside the submarine reactor in order to test the fuel rods. The other, which was never allowed to operate because it would have been too dangerous was the PAT loop, designed to test AGR reactor fuel rods for the CEGB.

Now that these reactors have closed there are no other reactors in the country which are capable of this kind of work. All these projects for the Polaris (and possibly Trident) submarines, and those to improve the efficiency of the country's nuclear reactors will never be done.

Reactor Safety

In January this year, *ATOM* (the UKAEA's magazine) had an article on the safety of the Harwell reactors, stressing that after a safety audit by the NII, the reactors were safe - this is not in fact the case.

The NII safety audit was conducted after the Department of Energy finally succomed to pressure form ex-employees, not least the ex-head of reactor design and research at Harwell. Its terms of reference covered not only the reactors, but also the experiments which operated within them. This audit was carried out from December '87 to January '88. The results of this survey, despite the fact that it was initiated by public pressure have never been published.

The actual situation is as follows. The reactors were built with a design life of 25 years - even so after 34 years the DIDO reactor was still running. Due to wear and corrosion the drain lines for the reactor vessel have suffered a number of pinhole leaks - in the event of the reactor pressurising, for example if an experiment ruptured, they almost certainly could have burst. For at least fifteen years the connections to the biological shield cooling coils leaked and saturated the concrete of the biological shield with water - this caused cracking of the shield in DIDO, and by the AEA's own admission an unknown amount of corrosion of the reactor vessel. The reactors are the only ones in the country to have the control room sited in the same room as the reactor - quite often operators had to evacuate the control room when airborne activity became too high. I could go on, but there is not room. Most seriously, there was no emergency shutdown system fitted to shutdown the reactor in the event of an accident . . . . . Good condition?

Closure

In February 1989, the AEA announced that PLUTO would close in March 1990, but DIDO would continue to operate for a number of years. In February of this year, totally without warning, the

... The Abuse of Trust

AEA announced that both reactors would close on March 31. This came shortly after the publication of a report, originally prepared for the Commons Select Committee on Energy, on the state of the reactors and associated plant at Harwell. Again, this closure was due to 'economic not safety considerations'.

The closure for economic and not safety is not true. The NII would not approve the safety case for the reactors in their current condition. Also, the safety case for experiments such as the DIDO Water Loop were highly suspect given the fact that the NII would not approve the PAT loop. It was estimated by the Harwell Reactor Research Division in 1985 that £18 million would be needed to bring the reactors up to standard. Therefore their only course of action was to shut DIDO as well.

The closure of these reactors is not the end of the story however.

Decommissioning

Harwell have stated that the reactors will be decommissioned to stage 1 - this involves only the removal of the fuel rods. The reactors will not however be sealed in concrete to prevent the escape of decaying fission and activation products. This is not a particularly awesome task with a reactor this size - in fact it is very simple. The AEA just don't want the hassle and expense.

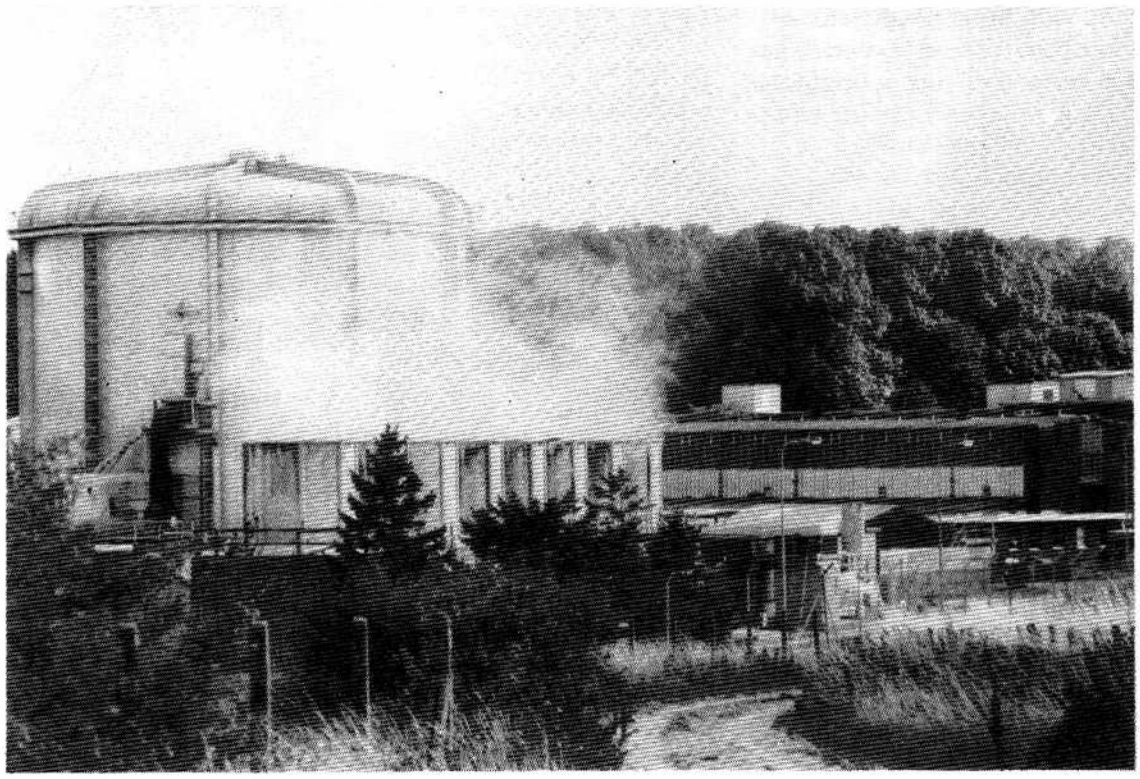
Another problem is the removal of twenty-five fuel rods from each reactor. The fuel pond at Harwell is quite small, and there are doubts whether it could accommodate fifty fuel rods safely. There is the prospect then that after closure the majority of the fuel rods may be left inside the reactors for six to twelve months to allow them to cool sufficiently enough for transport. The spent fuel rods will then be transported, as they have been for many years, by road over 800 miles to Dounreay for reprocessing.

Summary

It is of great relief that at last the Harwell materials testing reactors have closed. It should have been done some time ago but because of the AEA's exemption from the normal standards practiced within the nuclear industry they were kept running. The trust put in the AEA by the Atomic Energy Acts has been abused, both in the maintenance of the reactor plant and in the exposure of the employees to excessively high levels of radiation.

That a serious incident has not occurred already with these reactors is purely a matter of luck. They are closed, but there is much more to come.

PLUTO Reactor



Author Paul Mobbs is Director of Banbury Environmental Research. The full report on reactor safety and other issues produced by Banbury Environmental Research for the Commons Select Committee on Energy is available price £6. Write to Banbury Environmental Research, PO Box 59, Banbury, Oxon, OX16 8HF. An action factsheet, detailing ideas for things you can do, is available for £1.