

Safety breaches disrupt privatisation of British Nuclear Fuels

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Revelations that British Nuclear Fuels (BNFL) staff systematically falsified the records of reprocessed fuel rods has undermined the Labour government's plans to privatise the company. The export of suspect rods abroad means the scandal has since taken on international proportions.

BNFL, formerly part of the state-run Atomic Energy Authority, controls 11 of Britain's ageing nuclear power stations. The company employs around 20,000 workers and recently expanded into the US and Swedish nuclear-based generating markets, hoping to establish itself as the largest nuclear processor in the world.

Its reprocessing operations centre on the vast Sellafield site in northwest England. On August 20, 1999, a routine inspection by internal staff at Sellafield revealed identical measurements had been recorded for two different sets of plutonium mixed-oxide (MOX) fuel pellets, indicating that one set of records had simply been copied from another. The records were supposed to be a failsafe backup to confirm the accuracy of laser measurements by using manual micrometers on a percentage of the fuel pellets.

Reports of the false entry were leaked to the *Independent* newspaper, which ran the story in September. BNFL accepted falsification had occurred but claimed that only fuel rods containing pellets presently being prepared were affected, and that no suspect fuel rods had been exported for use in nuclear power stations around the world.

Over the next months this claim collapsed. By late September, BNFL conceded that at least one set of uninspected fuel rods had been exported to Japan. However, BNFL did not inform the Japanese Kansai Electric Power Company until three weeks after news of the falsifications emerged. Shortly afterwards, BNFL then retracted their statement, and again claimed no rods destined for Japan were implicated. By December, the company acknowledged that a "more sophisticated investigation" revealed that perhaps three consignments of suspect fuel rods had reached Japan. In the meantime, three workers involved in the falsification were sacked and others disciplined.

BNFL then launched an investigation to find out how the information had got into the public domain. The British Ambassador in Japan was forced to explain why BNFL had lied to its Japanese customers. On December 16, Kansai withdrew its application to load the MOX fuel into its Takahama 4 reactor.

On December 23, the Swiss nuclear safety authority announced that it had discovered serious problems in MOX fuel it had loaded into its Beznau reactor, and that assignments of the untested

Sellafield rods were involved. Three rod assemblies were found to be damaged and a further nine were removed for checking, having been in the reactor for only one year. It later emerged that suspect rods had also been sent to Germany's Preussen Elektra power company.

Despite further interventions by the British government, the Japanese authorities demanded that the MOX fuel be returned to the UK aboard BNFL's own armed merchant ships. Kansai and the Japanese industry minister stated that they had lost all confidence in BNFL.

In February this year, BNFL were roundly condemned in a Nuclear Installations Inspectorate (NII) report into the falsification scandal. During the NII inspection, the Sellafield MOX plant was closed until better procedures were introduced.

The report revealed that the falsification of records had effectively been routine since 1996—two years after MOX production was inaugurated at the trial plant. Four out of five shifts of process workers were implicated. The report was extremely critical of BNFL management, noting that falsification could only have occurred in an environment "without a proper safety culture". They found that the tests in question were "ergonomically badly designed", and routine. Data for 31 lots of rods containing around 4,000 fuel pellets were thought to have been unchecked. The report also noted that the workload had increased in the past period, although it was claimed that this did not impact on the falsifications. There had been an increase in incidents since early 1999.

The report's summary found that "there is a lack of a high quality safety management systems across the site which is compounded by an overly complex management structure ... there are insufficient resources to implement even the existing safety management system ... [and] a lack of an effective independent inspection, auditing and review system within BNFL".

Shortly after Labour came to power in May 1997, a 25 percent cut in BNFL costs by 2001 was proposed. Since 1994, 1,500 jobs have been lost at Sellafield alone.

The crisis has forced the delay of BNFL's privatisation, at least until after the next general election. The sell-off, announced by Labour in July 1999, is part of a new wave of privatisations, including the air traffic control service. Labour intends to raise between £1.2 billion and £2 billion through selling 49 percent of BNFL on the open market. Fears over the Japanese contract, the largest of £14 billion worth of future re-processing contracts, have

made the company unsaleable at present.

In an attempt to rehabilitate the company's image, on February 28 chief executive John Taylor resigned with a £300,000 payoff. He was quickly replaced by a Norman Askew, recruited from Virginia Power in the US, on a starting salary of £490,000. Labour's Trade and Industry Minister Stephen Byers claimed in Parliament that the scandal showed BNFL needed "private sector discipline".

Jack Dromey of the Transport and General Workers Union accepted a "collective responsibility" for the safety breaches, and proclaimed his continued support for the privatisation. "The unions drove through the most radical pay and change agreement anywhere in the economy for 10 years," he said, "This was designed to deliver world-class working practices, and end the Sellafield culture of long working-hours. The unions also backed the proposed Public/Private Partnership, essential to introducing new commercial and management disciplines."

MOX fuel is highly controversial, and Britain's nuclear fuel industry has long been shrouded in secrecy. MOX developed as a by-product of the demand for weapons-grade plutonium during the Cold War. The industry's direction has always been dictated by military and political considerations as well as commercial demands.

This can be seen at the Sellafield site, which since its construction has been the principal venue for efforts to store and reprocess nuclear waste and fuel into a form of plutonium that can be reused in reactors and/or inserted into nuclear warheads. Spent uranium extracted from so-called Magnox reactors was intended to be reprocessed for use as fuel in Fast Breeder (FB) reactors, providing plutonium for weapons and civilian use. The FB programme was heralded as offering cheap power well into the future.

The British authorities intended to reprocess used uranium using a Thermal Oxide Reprocessing Plant (THORP). In the 1970s they instigated plans to construct a THORP plant at Sellafield, then called Windscale. BNFL hoped this would enable it to establish its leadership in the FB programme world-wide, while ensuring an endless supply of plutonium. But the FB programme ran into serious international opposition as a consequence of technical difficulties, environmentalist protest and popular suspicion of the nuclear industry. In addition, countries like the US that already possessed nuclear weapons were anxious to prevent others getting hold of plutonium.

Whilst THORP was eventually built, an alternative process—MOX—was developed. This returns the plutonium extracted by THORP into less concentrated plutonium fuel rods that can be used in Light Water reactors, such as those operating in Germany, Japan and Switzerland.

This process has also run into difficulties. MOX fuel is expensive and dangerous relative to other nuclear power sources. In addition, MOX fuel can also be quickly transformed into weapons-grade plutonium and has drawn the ire of the US government and several organisations committed to nuclear non-proliferation. Non-proliferation advocates and environmentalists prefer weapons-grade and civilian plutonium be stored in secure sites until a safe means of permanently disposing of it has been

found.

Japan and Germany have been the principal MOX customers to date. BNFL are also angling for contracts to reprocess plutonium from redundant Russian nuclear weapons and reactors, which could then be resold globally.

Given the nature of MOX, the safety breaches revealed at Sellafield are irresponsible if not criminal. But the site has also been notoriously prone to accidents and emergencies. Apart from THORP and two MOX plants, it also contains four nuclear reactors and literally hundreds of partially supervised tanks of radioactive waste. In 1957, a nuclear reactor caught fire, resulting in a serious radiation leak. The remains of that reactor are not yet fully dismantled and remain under supervision. An advanced gas-cooled reactor on the site is also undergoing decommissioning.

There have been numerous instances of low-level waste leaking from storage tanks into the ground, or into the adjacent Irish Sea. In 1978, BNFL discovered that 2,200 gallons of waste from a tank had leaked into the subsoil. The exact contents of the tank are still unclear and news of the leak was suppressed for three months.

In 1983, BNFL were fined for releasing 50,000 curies of radiation into the Irish Sea, some of which ended up on local beaches, forcing their closure. In 1992, in a potentially very serious incident, plutonium was sprayed from a pipe. Had a different grade of plutonium been undergoing reprocessing, this could have resulted in an explosion. BNFL dismissed the incident as "an anomaly".

In a separate case from the present MOX row, BNFL are also being prosecuted by the NII over a 1999 incident when a release of concentrated nitric acid injured two workers at the plant.

The plant has been the focus for ongoing concerns about leukaemia clusters in the surrounding area. A recent study found that there was a significant increase in stillbirths to the partners of Sellafield workers compared to the rest of the population. News reports have suggested that even the local wildlife are a potential source of radioactive pollution. The Irish and Scandinavian governments have voiced longstanding concerns about widespread sea pollution resulting from the operation of the plant at Sellafield.



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