



Press Release

20th February 2012

EdF prepared to risk public safety at Hinkley B and other AGR nuclear power stations

It would be an accident waiting to happen if Électricité de France (EdF) were allowed to extend the life of their ageing fleet of advanced gas-cooled reactor (AGR) nuclear power stations. EdF announced their intention on the 16th February in what looks like a desperate move to keep their nuclear power generation going in the UK as investors shy away from new nuclear build that is increasingly looking like a white elephant. Among the numerous risks facing investors (1) is that trends in the energy market suggest there will be no market for nuclear power. And potentially by 2020, customers could buy their electricity more cheaply from booming photovoltaic technology in Italy or other cheaper renewable sources across Europe rather than be constrained to buy from UK/French nuclear energy providers.

No mention was made about the EdF extensions announcement at last Friday's Hinkley Site Stakeholder Group meeting. Stop Hinkley put questions to the Hinkley B Deputy Manager who had given a report following the planned refuelling outage towards the end of last year, asking why spend such a large outage maintenance sum of £35 million if closure was coming soon at 2016? Questions were also asked specifically about the amount of weld repairs etc. that had to be done and the previous queries about the graphite blocks in the reactor. He said that nothing definite was decided about the life extension but that it was highly probable that they would be pushing for one. His statement on the checking of welds (100%) and graphite channels (only 10% inspected) was that all was as expected and everything was well checked out as being OK and that comparison and cross-referencing was being done with the Hunterston reactors which were identical in their age and outages. Giving a vague 'as expected' answer regarding the condition of graphite cores and making unsatisfactory assurances is standard practice with British Energy (a subsidiary of EdF).

Last year the Blakett report (2) was published for the Government Office for Science on high impact, low probability events such as a nuclear accident. It states: "Social scientists such as Turner and Pidgeon (1998) have argued that major disasters do not occur 'out of the blue' but incubate over a period of time with potentially identifiable patterns of attributes. The need is for methods of identifying those preconditions with sufficient dependability to enable decision makers to make such politically difficult and potentially expensive decisions to avoid the even greater costs and consequences of a disaster." The preconditions are already identifiable in the ageing AGR fleet.

However, the inherent risks in EdF's plans do not seem to have registered with DECC (The Department of Energy and Climate Change) who were more concerned with pushing ahead with their flawed energy policy instead, as their response was to assert that the nuclear plant life extension announced by EdF does not alter the need for "urgent and speedy action" on new nuclear build in the UK. (3) This assertion is not based on facts. Extending the life of existing plants does indeed raise questions regarding the need for new nuclear build despite what they say, as life extension of EdF's AGR fleet could retain the equivalent of at least 6.5 gigawatts of nuclear electrical capacity on the national grid, equivalent to at least four 1,600-MW EPR reactors – more if Dungeness B is included in the AGRs to obtain future life extension.

Furthermore, DECC's statement indicates they may support EDF's ambitions as they didn't dismiss them as undesirable, further undermining the UK's renewable energy sector. As the Bristol Channel has the second highest tidal range in the world, the safer technology that takes advantage of that is the one to develop here, not nuclear.

Hinkley Point B is one of 14 AGRs EdF have earmarked for extension beyond their designed operating lives. It was already granted a controversial extension beyond 2011 that will expire in 2016 that Stop Hinkley objected to. Katy Attwater, the campaign group's spokesperson, declared "*EDF's plans for extensions has to be considered a totally irresponsible and unacceptable gamble as there are serious safety concerns about the crumbling graphite moderator cores and Hinkley B should be shut down now.*"

The Guardian wrote an article (4) on this subject back in 2006, in which John Large, an independent nuclear engineer, was quoted that "it was 'gambling with public safety' to allow Hinkley Point to continue operating. Calling for other AGR stations to be closed, he said: "The reactors should be immediately shut down and remain so until a robust nuclear safety case free of uncertainties has been established".

John Large & Associates had done a report (5) for Greenpeace of the papers obtained through Freedom of Information requests. It states:

The nuclear safety issues identified by NSD are:

- o A number of the graphite bricks that make up the moderator cores of the Hinkley Point reactors are extensively cracked.*
- o The operator British Energy has not yet developed a full understanding of why the cracking is occurring and it is unable to reliably (statistically) extrapolate how many core bricks may be similarly damaged from the limited in-core inspections available during the periodic shut downs of each reactor.*
- o British Energy has been unable to establish the level of cracked bricks (numbers and locations) tolerable within the core before the residual strength of the core falls below the minimum required for the reactor nuclear safety case.*
- o Because of significant uncertainties the Nuclear Installations Inspectorate has, or is about to, impose a requirement for more frequent in-core inspection of a greater number of fuel channels than British Energy has hitherto agreed to undertake.*
- o Even with more frequent and probing in-core inspections, there are currently no means of detecting hidden but developing sub-surface cracks, so it is entirely possible that this age-related damage may be much more extensive than presently determined.*

Ageing power stations suffer from increasing incidence of leaks, diverse equipment failures and maintenance problems leading to reductions in output and more frequent unscheduled outages. Hinkley B's boiler tube cracking in 2006 forced British Energy (part of EDF Energy) to bring it back online at only 70% of full capacity to reduce thermal stress as well as for statutory outages being undertaken every two years compared to the 3-year cycle previously, in order to carry out boiler inspections. In practical terms, it is very difficult indeed to execute a replacement of the boilers instead of doing repairs. (6) An AGR reactor core is surrounded by 12 boilers, which are contained in the steel-lined concrete pressure vessel. Hunterston B also suffered from boiler tube cracking. It is due to 'creep', a phenomenon that affects thermal power stations that operate at high temperatures and pressures.

Another ongoing concern is the inadequacy of Hinkley Point B's shut down systems. The two reactors can be shut by inserting control rods, or injecting nitrogen gas, to halt the nuclear reaction. However, as cracking and misalignment of the graphite core bricks could no longer guarantee the rods would deploy properly, articulated rods were designed (along with an updated nitrogen gas injection system) that, in theory, is

supposed to overcome the problem - assuming no further misalignment occurs that could lead to an accident.

All other AGRs, apart from the oldest at Hunterston and Hinkley Point B, have a tertiary shutdown system, beyond the control rods and the nitrogen, that use boron beads as the final fail safe. British Energy's idea of a third shutdown system is to pour water in. The situation at the Fukushima Daiichi plants illustrate the problems with that. Katy Attwater also said "*Putting water into a very hot hole of graphite is sheer folly.*"

There would be something seriously wrong with the regulators if they accept any safety cases for these ancient stations to operate beyond their current time limits and grant extensions as EdF wish. If anything, their closures should be brought forward as the pre-conditions and uncertainties that could lead to a major accident exist. New nuclear build, with little prospect of a market for its energy by the time any construction ends, will itself become 'old' nuclear build with all its inherent risks.

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NOTES TO EDITORS

1. 'The Financial Risks of Investing in New Nuclear Power Plants', Energy Fair, February 2012. www.energyfair.org.uk
2. 'Blackett Review of High Impact Low Probability Risks', Government Office for Science, 2011.
3. "'Urgent and speedy action" still needed on UK new build, despite EDF plant life extension', February 16, 2012, By i-nuclear at <http://www.i-nuclear.com/author/admin/>
4. 'Documents Reveal Hidden Fears over Britain's Nuclear Plants. Unexplained cracks in reactor cores increase likelihood of accident, say government inspectors', by John Vidal and Ian Sample, July 5 2006, The Guardian
5. 'Brief review of the documents relating to the graphite moderator cores at Hinkley Point B and other advanced gas-cooled reactors. Document bundle obtained under the Freedom of Information Act 2000' CLIENT: GREENPEACE UK, REPORT REF N^o R3154-GRAPHITE John Large & Associates, 2006
"The extracts from the Fol documents, together with other papers and reports from both British Energy (BE) and NSD, reveal there to be significant uncertainties over the structural integrity and residual strength of the moderator cores in other AGR plants (in addition to Hinkley Point) at Hunterston, Heysham 1 and Hartlepool. Despite heavy redaction, the documents hint that the remaining 6 AGR reactors at Dungeness, Heysham 2 and Torness are also subject of these concerns so, in total, there is uncertainty about the safety of 14 reactors at all 7 UK AGR nuclear power stations."
6. 'British Energy's bifurcation blues', Nuclear Engineering International, 22 Nov 2006. <http://www.neimagazine.com/storyprint.asp?sc=2040465>