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nuClear news

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1. Is the UK renaissance teetering on the brink?

Last month we reported on the deep-seated fear in the nuclear industry that Britain's current funding plans will not be sufficient to see the first cement poured in the ground. The coalition Government has been keen to stress it will support new nuclear reactors provided they do not require public subsidy. However, the coalition has also agreed to implement a floor price for carbon in the European emissions trading scheme, which British Energy owner, EDF, has long been arguing for. The advantage for EDF is that it will benefit by an estimated £350m a year in windfall profits from its existing plants when the measure is introduced.

German utilities RWE and E.ON, who hope to build new stations at Wylfa and Oldbury, have been frequently reported saying a carbon floor price will not be enough incentive for new construction. A study by KPMG for RWE published just last July said new reactors will not be built if the Government persists with its promise to refuse them taxpayer support - the carbon floor price will not be enough. (1) And in August EDF was reported to have finally agreed with the German utilities saying it no longer believes a carbon floor price will be enough. (2) Centrica, which aims to build the UK's first two new stations in partnership with EDF, says the proposed floor price is unlikely to boost investment on its own unless it is set at a pretty high level. (3)

Then, on 15th September, the Energy Secretary gave evidence (4) to the House of Commons Energy and climate Change Committee in which he said almost the complete opposite:

"*...in my contact with the industry ... we had some people in the industry saying that the carbon price floor would be enough. We had other people in the industry preferring other options. The contacts that I have had with the industry recently have been quite interesting in that they have converged on the view that the carbon price floor will be enough ...*" (5)

This led to angry responses from E.ON and RWE. E.ON has written Mr Huhne to complain about his remarks, and RWE has also sought '*clarification*' from the Department of Energy and Climate Change. Both companies are said to be "livid" about the remarks, because they imply Mr Huhne has rejected calls from the two utilities for a consumer-funded levy to support new reactors, and is backing the carbon floor price instead. RWE and E.ON believe Huhne's comments contradict repeated arguments they have put to him since the general election in May. Citigroup, said: "*It's extremely unlikely that any company could invest in new nuclear plants based solely on a carbon floor price*."

The Times argued this row could put E.ON and RWE's plans for their joint venture – Horizon Nuclear which plans to build new reactors at Oldbury and Wylfa - in jeopardy. (6) DECC's response was just to say that a consultation on a wide range of options to support low carbon generation would be held in November.

Meanwhile, at the Liberal Democrats conference in Liverpool, Paul Spence – the strategy and regulation director for EDF, told a fringe meeting the company needs more assurances from the coalition government before investing in building four new nuclear power stations in the UK. He wants more certainty over national policy statements, the mechanism for paying for waste processing, and a floor price for carbon. (7)

(1) See NuClear News No.21 "Calls for Subsidies Grow". http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo21.pdf
(2) Telegraph 14th August 2010 http://www.telegraph.co.uk/finance/newsbysector/energy/7945867/Britain-is-struggling-to-power-the-nuclear-revolution.html
(3) FT 29th July 2010 http://www.ft.com/cms/s/0/2ab47814-9a9b-11df-87e6-00144feab49a.html
(4) Video of the evidence session 15th September 2010 http://www.parliamentlive.tv/Main/Player.aspx?meetingId=6615&player=silverlight
(5) Uncorrected transcript of Chris Huhne's evidence to the House of Commons Energy & Climate Change Committee 15th Sept 2010 (Q76) http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/uc474-i/uc47401.htm
(6) Times 20th September 2010 http://www.thetimes.co.uk/tto/business/industries/utilities/article2733897.ece
(7) Building 22nd September 2010 http://www.building.co.uk/home/party-conferences/edf-boss-urges-governement-to-commit-to-nuclear/5006032.article

2. Frightening European Utilities off to China

On Monday 20th September, Sedgemoor District Council, invited local authorities from areas with a proposed site for new reactors to a seminar. Speakers included Hergen Haye, Head of New Nuclear at DECC who gave an update the National Policy Statement; Robert McCracken QC, who discussed planning, mitigation and compensation for areas where nuclear power stations are built; and Peter Haslam from the Nuclear Industry Association.

A reliable source at the meeting said local councillors and executives were urged by the Government to go easy on the nuclear utilities in case they decide to take their money to China and build there instead. (1)

This doesn't seem to have stopped Sedgemoor demanding more compensation from EDF. The Council has raised serious objections to EDF's proposals for the Hinkley Point C nuclear power station. It said the company's consultation was flawed and lacked detail, and the development would have negative impacts on the area. Council officers say the quality of the information presented by EDF is "*wholly inadequate*". Unless the negative impacts arising from the construction and operation phases are mitigated appropriately, "*the council must formally object to the proposal as a whole*".

Sedgemoor chief executive Kerry Rickards said: "*Local authorities across the country are looking at us to get this right and simply more talks are needed. We must not just roll over and accept EDF's plans as it will set a precedent for other nuclear build sites across the country*." (2)

West Somerset district councillors followed Sedgemoor District Council's lead in raising serious objections to EDF's proposals, and Somerset County Council is being recommended to make a "robust" response when a special cabinet meeting convenes to debate the proposals on 30th September. Hinkley is within West Somerset, where communities believe their lives will be blighted for the foreseeable future unless the French energy giant vastly improves its mitigation plans. (3)

EDF has been urging people to respond to its second phase consultation on Hinkley before the closing date on 4th October. (4) The consultation documents are available at http://hinkleypoint.edfconsultation.info/public-documents/

(1) Shepperdine Against Nuclear Energy Blog 23rd Sept 2010 http://shepperdineagainstnuclearenergy.blogspot.com/2010/09/eonrwe-and-edf-off-to-china.html
(2) This is Somerset 23rd Sept 2010 http://www.thisissomerset.co.uk/news/Flawed-nuclear-plans-opposed/article-2677318-detail/article.html
(3) This is Somerset 27th September 2010 http://www.thisissomerset.co.uk/news/Councils-want-power-firm-open/article-2689102-detail/article.html
(4) Burnham-on-Sea.com 28th September 2010 http://www.burnham-on-sea.com/news/2010/hinkley-point-consultation-27-09-10.php

3. EPR Reactors - unlicensable, unaffordable and unbuildable.

Steve Thomas, Professor of Energy Policy at Greenwich University says much has been made of Huhne's statement that we are on course for the first new reactor to open in 2018. But experience with EPR construction projects elsewhere in the world and issues raised by the safety regulators worldwide on the EPR design are much more significant. (1)

The comedy of errors at Olkiluoto in Finland and Flamanville in France, where the first two EPR reactors are both very late and over budget has been reasonably well documented. Problems seem to have arisen at least partly because designs were not completed with full safety regulatory approval before construction started. So, in theory, pre-construction regulatory approval could solve the problem.

But it seems highly unlikely that the design will get unqualified approval by June 2011 in the UK according to the regulators' original timetable. (2) At that point some issues will have to be left unresolved. The US regulator, which is also carrying out a generic review of the EPR design, has recently expressed reservations on the control systems and other issues, so the timetable for reviewing the EPR there is slipping significantly – it is currently not expected to be complete before mid-2012.

In October 2009 the French government commissioned a former CEO of EDF, Francois Roussely, to review what was going wrong with the EPR. The report, *The Future of the French Civilian Nuclear Sector* was published in July 2010. Roussely's diagnosis was damning. He said experience with Olkiluoto and Flamanville had '*seriously shaken ... the credibility of the EPR model and of the capacity of the French nuclear industry to succeed in new nuclear plant construction*.'

But his recommendations were unconvincing. He says the EPR design should be 'optimised' to achieve the same safety as the existing EPR design with a better detailed design. This new design would be used at Hinkley Point, and Penly - a French site designated for the next French EPR order. Roussely assumed that this would be possible without significantly delaying these orders, expected for 2011 and 2012 respectively. Professor Thomas says this is completely unrealistic. Any changes big enough to reduce costs significantly would almost certainly be radical enough to oblige the regulator to make a full, time-consuming re-assessment of the design. Unless things start to go right

for the EPR soon, the UK is in danger of backing a design that could prove unlicensable, unaffordable and unbuildable.

In the US, the troublesome reactor design has been proposed for construction at Calvert Cliffs and is a leading candidate for a multi-billion-dollar U.S. loan guarantee. Even before ground is broken, the projected cost of France's design is well above the average for other reactor designs. (3) A new study by Dr Mark Cooper at the Vermont Law School Institute for Energy and the Environment concludes:-

"If the U.S. nuclear industry is relaunched with massive subsidies, this analysis shows the greatest danger is not that the U.S. will import French technology, but that it will replicate the French model of nuclear socialism. Nuclear power will remain a ward of the state, as has been true throughout its history in France; a great burden on ratepayers, as has been the case throughout its history in both France and the U.S.; and it will retard the development of lower-cost renewables alternatives, as it has done in France and portions of the U.S." (4)

EDF's US business continues to unravel as a result of a dispute with Constellation Energy, its partner in its US nuclear operations. While EDF remains committed to building new nuclear plants in the US, people familiar with the matter said, the partnership with Constellation could be unwound. The companies are at loggerheads over a deal struck two years ago that allowed Constellation to sell gas and coal-fired power, generating assets to EDF for up to $2bn. (5)

Meanwhile EDF has experienced renewed problems with welding quality at the EPR nuclear reactor being built at Flamanville. (6)

(1) Parliamentary Brief 1st Sept 2010 http://www.parliamentarybrief.com/2010/09/really-mr-huhne-you-should-brush-up-on-your-french
(2) See Assessing Reactor Designs, NuClear News No.21. http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo21.pdf
(3) France's nuclear miracle is more fantasy than fact, by Dr Mark Cooper, The Hill, 23rd September 2010 http://thehill.com/blogs/congress-blog/energy-a-environment/120631-frances-nuclear-qmiracleq-is-more-fantasy-that-fact
(4) Digital Journal 9th Sept 2010 http://www.digitaljournal.com/pr/109960
(5) See Assessing Reactor Designs NuClear News No.21 http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo21.pdf and FT 28th September 2010 http://www.ft.com/cms/s/0/4c94f636-ca8c-11df-a860-00144feab49a.html
(6) Bloomberg 30th August 2010 http://www.bloomberg.com/news/2010-08-30/edf-has-welding-problems-at-flamanville-epr-reactor-french-watchdog-says.html

4. Scientific Problems with Disposal: False Picture Presented by International Nuclear Officials

In March 2010 Nuclear Waste Advisory Associates (NWAA) listed over 100 outstanding scientific and technical issues with nuclear waste disposal. (1). NWAA extensively quoted the European Commission Joint Research Centre's (JRC) 2009 report on disposal. (2) However, despite the numerous problems JRC reported – the overall conclusion of the report was that the technology of geological disposal has developed well enough for programmes to be implemented. However, this conclusion was based largely on a description of ongoing research projects – rather their results - and nuclear agency reports, which tend to be collective statements based on views rather than an analysis of scientific literature. Only three papers published in scientific journals are referenced.

Importantly the JRC report falsely claims that it is mainly due to a lack of public acceptance that repository programmes in Germany and the UK have (temporarily) foundered, rather than because of scientific problems that jeopardise safety.

Similarly, the Organisation for Economic Co-operation and Development's (OECD's) Nuclear Energy Agency (NEA) states that *"geological disposal is technically feasible"* and that a *"geological*

disposal system provides a unique level and duration of protection for high activity, long-lived radioactive waste. (3) Again these statements are based solely on the collective views of its Radioactive Waste Management Committee, not on an analysis of the existing scientific evidence.

Now a literature review of papers in scientific journals for Greenpeace International (GPI) (4) provides an overview of the status of research and scientific evidence regarding the long-term underground disposal of highly radioactive wastes. It identifies a number of phenomena that could compromise the containment barriers, potentially leading to significant releases of radioactivity.

Prior to the burial of radioactive wastes in a deep disposal facility, the nuclear industry must demonstrate that the amount of leakage would not be excessive. The waste would be dangerous for hundreds of thousands to millions of years into the future – and on this basis alone the nuclear industry predictions hardly seem credible. The wastes and the disposal system are expected to behave in an extremely complex manner. Many of the processes involved are poorly understood and many of the assumptions made to predict the rate of leakage are impossible to verify. Unless and until these difficulties can be resolved, the data suggests that it is quite likely that a significant release of radioactivity from a deep burial facility could occur, with serious implications for the health and safety of future generations.

A number of low- and intermediate-level radioactive waste disposal sites have operated over the last 50 years. However, many of these supposedly final disposal sites have already caused unexpected environmental contamination. This highlights how difficult it is to predict what would happen to buried wastes, even over short timescales. Examples include the Centre de Stockage de la Manche storage site in France, where water supplies in the aquifer have become contaminated, (4) and also the Asse II salt mine in Germany where safety problems, including the leaking of saline water into the chambers, persuaded authorities to retrieve and repackage the waste . (5) Despite the fact that nuclear programmes have been in existence for over half a century there is no dump anywhere in the world for high level wastes.

Brief summary of some of the technical issues that jeopardise dump safety

Corrosion: An argument that is absolutely fundamental to the nuclear industry's assumptions concerning dump safety is that the waste containers would last for an extremely long time – and so hold the radioactivity deep underground. However, experimental data indicates that the mechanisms for corrosion are not fully understood. As a result copper and steel could corrode more quickly than expected and so allow faster than predicted release of radioactivity. Three key issues are the role of bacteria; the rate of corrosion occurs in the absence of oxygen; and also the impact of the intense radiation.

Backfill: The material packed into the space between the wastes and the rock wall is known as 'backfill'. 'Bentonite' clay is most often quoted as the backfill material that would be used and it is meant to play an important role in trapping leaking radioactivity. However, the intense heat coming from the wastes could seriously jeopardise bentonite's ability to act as a radionuclide trap. Chemical and physical disturbance due to corrosion, gas generation and biomineralisation (the process of bacteria producing minerals) could also adversely affect the properties of the bentonite backfill.

Solubility, sorption and transport of radionuclides: Generally speaking the chemical processes that would occur in a deep disposal facility are very poorly understood. Chemical effects, such as the formation of colloids and the role of microbes, could speed up the transport of some of the more radiotoxic elements such as plutonium. Build-up of gas pressure in a repository could damage the barriers and force fast routes for radionuclide escape through crystalline rock fractures or clay rock pores. Radioactive carbon dioxide and methane could also be released – which would have very serious implications for the dose of radioactivity that people received – due to the fact that carbon is a critically important for biological systems.

Bedrock properties and hydrogeology: Unidentified fractures and faults, or poor understanding of how water and gas will flow through faults, could lead to the release of radionuclides much faster than expected. In addition excavation of a repository could create fast routes for radionuclide escape through the part of the rock damaged by the excavation.

Other issues which need to be considered include, human error and human intrusion; future glaciations and earthquakes.

Conclusion: It is clear there are serious problems with proposals for deep burial of radioactive wastes. The vast majority of funding for radioactive waste scrutiny is focussed on the nuclear industry who have a vested interest in minimising the problems. This is particularly the case in the context of plans for the construction of new nuclear reactors – which would necessarily create more wastes.

The regulators are responsible for reviewing safety cases and ultimately for licensing facilities. In the UK in the late 1980s / early 1990s 'Her Majesties Inspectorate of Pollution' (HMIP) the predecessor to the Environment Agency invested heavily in a research programme on disposal safety that was independent of the nuclear industry, producing an extensive series of high quality reports. However, at the critical moment, when the initiation of the proposed disposal programme was the subject of a Planning Inquiry the HMIP withheld their research. Friends of the Earth submitted the documents and cross-examined the nuclear industry on the basis of their contents

Greenpeace and Cumbria County Council also opposed the 1990s proposal and following the scrutiny carried out at the Inquiry, the proposal was rejected. At the inquiry, the objecting groups had a total budget one hundredth that of the nuclear industry but nevertheless succeeded in demonstrating significant problems with the safety case by referring to the HMIP research plus sufficient alternative expertise.

In 2008 planning law was changed, so that the cross examination of future proposals will not be possible. The Environment Agency needs to establish a way in which independent research can be carried out which is quite separate from nuclear industry directed research.

(1) NWAA Issues Register, Nuclear Waste Advisory Associates, March 2010. http://www.nuclearwasteadvisory.co.uk/uploads/6901NWAA%20ISSUES%20REGISTER%20COMMENTARY%20letterhead.doc

(2) W.E. Falck and K.-F. Nilsson "*Geological Disposal of Radioactive Waste: Moving Towards Implementation*", European Union – Joint Research Centre – Reference Reporthttp://ec.europa.eu/dgs/jrc/downloads/jrc_reference_report_2009_10_geol_disposal.pdf

(3) OECD/NEA, 2008. Moving for*ward with geological disposal of radioactive waste: An NEA RWMC colle*ctive statement. NEA/RWM(2008)5/REV2. http://www.nea.fr/html/rwm/docs/2008/rwm2008-5-rev2.pdf

(4) Wallace, H. Rock Solid? A Scientific Review of Geological Disposal of High Level Radioactive Waste, Greenpeace International, Genewatch UK, September 2010. http://www.greenpeace.org/raw/content/eu-unit/press-centre/reports/rock-solid-a-scientific-review.pdf

(5) ACRO. 2009. Gestion des déchets radioactifs: les leçons du Centre de Stockage de la Manche. Centre sans mémoire, centre sans avenir? Greenpeace France 25th June 2009. http://www.greenpeace.org/raw/content/france/presse/dossiers-documents/rapport-gestion-desdechets-radioactifs.pdf

(6) Asse II. Website on: http://www.endlager-asse.de/cln_094/EN/1_Home/home_node.html

5. West Cumbrian Partnership Temporarily Suspended

The September meeting of the West Cumbria Managing Radioactive Waste Safely Partnership, which was due to take place on the 29th September, was cancelled because the new Government has failed to agree funding for the Partnership. (1) The postponed meeting was also supposed to see the publication of the results of a British Geological Survey (BGS) high-level study into the suitability of the geology of West Cumbria to host a repository. (2)

Greenpeace will be writing to the Cumbrian local authorities involved concerning the decision by the Department of Energy and Climate Change (DECC) not to publish the BGS survey which contains information on those areas of Allerdale and Copeland that may be considered suitable to host a 'geological disposal facility' (GDF) for higher activity legacy and new build wastes. Greenpeace will ask the Councils to push for publication of the report as soon as possible. It says there is no reason why publication of the report could not still have gone ahead regardless of funding issues as people have a right to see the information in the report. (3)

There are concerns that the funding situation, and the delay in publication of the BGS report, have been engineered by DECC in order to avoid public backlash on waste disposal plans in Cumbria prior to other major announcements on new nuclear reactors by the government. These include the publication of the revised Nuclear National Policy Statement, the decision on Regulatory Justification of new reactors and an 'indicative' fixed price for the costs of disposing of spent fuel and wastes from new reactors. These are all expected in October. All of these decisions and publications relate to the issue of nuclear waste disposal from new reactors.

Ben Ayliffe, Greenpeace Senior Energy Campaigner, said:

"*The Government line on new reactors is that the process of deciding on nuclear waste disposal is progressing smoothly. Now it's clear they're not so sure. Lack of funding for those councils involved is a major problem, but more of a headache for government is the potential for public outcry in those areas that find themselves on a possible waste disposal map, with non-nuclear areas listed as potential dumping grounds.*

(1) Cumberland News 23rd September 2010 http://www.cumberlandnews.co.uk/west-cumbria-nuclear-dump-debate-on-hold-1.761154?referrerPath=business
(2) Platts 22nd September 2010 http://www.platts.com/RSSFeedDetailedNews/RSSFeed/HeadlineNews/Nuclear/8979723/
(3) Whitehaven News 29th September 2010 http://www.whitehaven-news.co.uk/news/greenpeace-calls-for-information-on-high-level-radioactive-waste-1.763484?referrerPath=news

6. Scottish Low Carbon Debate goes Nuclear.

A debate in the Scottish Parliament on a Scottish Government motion which called for an acknowledgement of a national consensus on building a low carbon economy showed signs of future political disagreements over nuclear power in the run up to next year's elections in May, but no-one really expects nuclear power to make much headway north of the border in the near future. (1)

For the opposition, Labour's environment spokesperson, Sarah Boyack MSP, while agreeing on the need for investment to ensure that we have the skills and infrastructure in place to make the most of Scotland's fantastic renewables opportunity, said it was also necessary to put fuel poverty firmly on the agenda. Labour's amendment to the Government motion highlighted housing, microgeneration and combined heat and power. She criticised the Scottish Government for not doing enough in these areas, but Labour's amendment did not stray into nuclear territory.

Perhaps if it hadn't been for a Tory amendment to the motion, nuclear wouldn't have come up. But Boyack managed to leave Parliament wondering whether she was talking about new reactors or reactor life extensions:

"Labour has always been clear in saying that the SNP is wrong to rule out nuclear as part of the energy mix for the future. We understand that managing waste will always be a key issue, but it is entirely sensible to keep our existing plant open as long as it is safe to do so."

She continued by noting:

"... Chris Huhne's comment this week on the standoff between nuclear and renewables, in which he said that there should be no subsidy for new nuclear power. ***Labour's priority is for renewables****. That is where we have the best potential for development and where all our political support and funding should be targeted. If we are to have a chance of achieving a low-carbon society, it needs to sit alongside energy efficiency across society and our economy." [emphasis added]*

For the Tories Jackson Carlaw MSP highlighted the scheduled closure of Hunterston B and Torness – currently in 2016 and 2023 respectively, and claimed that nuclear capability is responsible for up to 30 per cent of Scotland's energy. But even the Tories support for new reactors was half hearted. The Tory amendment did not require the development of an ultimate replacement – it only sought life extensions for Hunterston and Torness **OR** their replacement. Carlaw accepted that:
"*...it is probable that EDF Energy's capacity to progress the four new nuclear power stations elsewhere in the United Kingdom cannot accommodate a further new station at this time. There is no immediate need to commission a new nuclear station—that can wait. Of much more immediate concern is an extension of the life of our existing capability*".

Of course running old nuclear stations into the ground raises other issues. Reactors are most vulnerable to accidents when they are first open and when they are old. (2) But politicians have very limited control over that, especially Scottish Parliamentary ones who have no powers over the Nuclear Installations Inspectorate.

Labour's Energy Spokesperson, Lewis McDonald, chose to highlight the SNP Government's poor record in giving planning consent to renewable projects, and the major opportunities for Scotland in offshore wind generation, in the transfer of skills. On nuclear he showed the same lack of enthusiasm as many others simply saying it would be a:

"...mistake to rule out nuclear power, even if the prospect of new nuclear developments in Scotland are currently remote."

Labour's amendment was agreed to by the Government, and the amended motion agreed by the Parliament. Labour also voted with the Conservatives in favour of nuclear life extensions or replacement reactors, but this amendment failed to get through.

The Minister for Transport, Infrastructure and Climate Change, Stewart Stevenson, closed the debate by pointing out that the Labour vote *"will come as a great disappointment to many supporters and MSPs of that party".*

Meanwhile, the Unions at EDF's Hunterston nuclear station in Ayrshire have been arguing against proposals to build a coal-fired power station next door. They say they are confident that evidence presented to the regulator in the form of periodic safety reviews will in all probability result in agreement to a significant life extension for Hunterston B until 2021 or 2026. This would give the plant a life of 45 or 50 years. The union said it expects Torness to survive for 50 years as well, which would take its closure date to 2038. (3)

Only 18% of Scots would like to see new reactors built north of the border according to a poll commissioned by *The Scotsman*. (4) The Scottish Government has increased its target for the percentage of electricity to be supplied by renewable sources in 2020 from 50% to 80%. The move was welcomed by Scottish Renewables, the industry lobbying body, which published a report it commissioned from energy consultants, Garrad Hassan, which showed that 123% would be attainable. The report examined existing proposals for renewable projects and current build rates. (5)

First Minister, Alex Salmond predicted that Scotland would be able to meet its entire electricity needs with renewable sources by 2025. Speaking ahead of a Scottish Low Carbon Investment Conference in

Edinburgh, Mr Salmond said a new Offshore Wind 'Route Map' would be unveiled at the event to show how the country can maximise potential energy sources around its coast. (6)

(1) http://www.scottish.parliament.uk/business/officialReports/meetingsParliament/or-10/sor0923-02.htm#Col28916
(2) See Figure 1, the Bathtub Curve, page 4 in US Nuclear Plants in the 21st Century, by David Lochbaum, Union of Concerned Scientists, May 2004 http://www.ucsusa.org/assets/documents/nuclear_power/nuclear04fnl.pdf
(3) Largs and Millport Weekly News 1st September 2010 http://www.largsandmillportnews.com/news/roundup/articles/2010/09/01/404629-hunterston-unions-want-new-nuclear/
(4) Scotsman 27th September 2010 http://news.scotsman.com/scotland/Only-1837-of-Scots-say.6551329.jp
(5) Herald 24th September 2010 http://www.heraldscotland.com/news/politics/salmond-announces-80-green-energy-aim-1.1057181
(6) Herald 28th September 2010 http://www.heraldscotland.com/news/transport-environment/salmond-renewable-energy-will-power-scotland-by-2025-1.1057921
See Driving the Low Carbon Economy: Paper 1 – Renewing our ambitions. Scottish Renewables, September 2010. http://www.scottishrenewables.com/MultimediaGallery/435778a0-b7c6-49f3-a7a8-f83a6e7c1ede.pdf

7. Scottish Waste Experiment – radical storage policy or guinea pig for graphite?

The Scottish Government has published an annex to its Environment Report as part of its Higher Activity Radioactive Waste Consultation. The Annex is open for comment until 21st October. (1) Several respondents to the earlier consultation, including the Committee on Radioactive Waste Management (CoRWM), asked for greater detail on deep geological disposal, and why the Scottish Government has rejected it.

The Annex says there are a number of significant environmental challenges associated with deep geological disposal, and therefore possible benefits arising from the draft Policy which favours near surface storage or disposal. The Scottish Government position remains that it is does not support deep geological disposal of radioactive waste and does not consider it to be a 'reasonable' alternative at this point in time. Scottish Policy is that the long-term management of higher activity radioactive waste should be in near surface facilities.

Part of the Scottish Government's reasoning for rejecting deep disposal seems to be that much of the Intermediate Level Waste (ILW) in question (the policy doesn't cover spent fuel) is either graphite (45%) or activated (15%) and contaminated metals (14%). Given that all the UK Environment Agencies have jointly published Guidance (2) on near-surface disposal of ILW – including some types of longer-lived ILW, and the fact that 30% of the waste inventory by volume currently expected to go to the Geological Disposal Facility (GDF) is graphite, the Scottish policy has more implications for England and Wales than is immediately obvious.

Apart from its large volume a key concern with graphite waste, according to CoRWM is that:

"…*it contains significant quantities of the potentially mobile and relatively long-lived radionuclides carbon-14 and chlorine-36*." (3)

A major concern with deep disposal, highlighted by the Environment Agency, is that Carbon-14, instead of being retained in a deep facility, would be able to escape as methane gas (CH4) and travel quickly upwards through fractures and pores in the overlying rocks until finally reaching the surface environment and entering the food chain. (4) So, clearly there are significant incentives to keep graphite waste out of the GDF. But it is not clear at all from the information available in the Scottish Consultation why near-surface 'disposal' is a better alternative, other than to assist in making the safety case for the deep disposal of the remainder of the radioactive waste inventory.

Magnox North has now announced that it is assessing the technical viability and potential siting locations for permanent disposal facility which would be located several tens of metres below ground for graphite waste at Hunterston A. Early exploratory work was expected to start in September. The feasibility study will assess options for the concept design of a near-surface facility and possible locations on site.

The thing which is particularly worrying local residents near Hunterston is that the site already has an above ground storage facility large enough to accept the graphite waste. Placing graphite waste in near surface disposal facility means there would then be spare capacity in the Intermediate Level Waste store implying that there may be plans to import waste to Hunterston from outside of the area.

(1) Scotland's Higher Activity Radioactive Waste Policy, Strategic Environmental Assessment, Annex to the Environmental Report, Supplementary Assessment of Policy Alternatives, Scottish Government, September 2010. http://www.scotland.gov.uk/Resource/Doc/324119/0104295.pdf See also Scotland's Higher Activity Radioactive Waste Policy Consultation 2010 (The Consultation Document) http://www.scotland.gov.uk/Resource/Doc/298914/0093253.pdf and Environmental Report 2010 http://www.scotland.gov.uk/Resource/Doc/298929/0093254.pdf

(2) Near surface disposal facilities on land for solid radioactive wastes: Guidance on Requirements for Authorisation, EA, SEPA, NIEA, February 2009. http://www.sepa.org.uk/radioactive_substances/radioactive_waste/idoc.ashx?docid=4a1c64c2-5599-4e94-86d1-cb99cb62683c&version=-1

(3) "CoRWM report to Government - on National Research and Development for Interim Storage and Geological Disposal of Higher Activity Radioactive Wastes and Management of Nuclear Materials" Report 2543, October 2009. Paras A.9 and A.10 http://www.corwm.org.uk/Pages/Current%20Publications/2543%20CoRWM%20Report%20on%20RD%20Final%2030%20October%202009.pdf

(4) See Nuclear Waste Advisory Associates submission to the Scottish Government Consultation. http://www.nuclearwasteadvisory.co.uk/uploads/7689NWAAsubmission[final].pdf

(5) Magnox North Press Release 18th August 2010. http://www.magnoxnorthsites.com/news/2010-08-18/hunterston-a-site-graphite-pathfinder-project-

8. NDA Strategy Consultation – close to zero sometime, maybe, or never?

In 2005, when the recently established Nuclear Decommissioning Authority (NDA) published its first strategy for consultation, environment groups and the Nuclear Free Local Authorities (1) objected to plans to continue operating facilities producing nuclear waste for which there is no management solution, despite its objective being to decommission and clean up its sites. One particular bug bear was that the UK Government had signed up to an international treaty, known as OSPAR, on the protection of the marine environment of the North-East Atlantic. This Treaty is supposed to ensure discharges of radioactive substances are reduced to levels where concentrations in the marine environment above historic levels are close to zero. (2)

The operating facilities in contention included Magnox stations, the two Sellafield reprocessing plants and the Sellafield MOX (plutonium fuel fabrication) plant (SMP). Some 80% of the estimated critical group dose from Sellafield's liquid discharges is attributable to Magnox reprocessing and associated waste treatment, (3) so you might expect this plant to be a priority for early closure. The NDA's finalised first strategy document (4) said it would close in 2012. Environment groups felt this was too late and that closure could be brought forward by closing Magnox reactors earlier, but since 2006 technical problems at the Magnox reprocessing plant have meant it is now unlikely to close before 2016. (5)

And yet discussions continue about extending the life of the remaining two Magnox stations. Oldbury, which at the time of the NDA's first strategy was due to cease generation in 2008, is now seeking permission to run one of its reactors until mid-2012. (6) And Wylfa is applying to extend its operating license to 2014, whereas according to the first strategy it should have been closing this year. (7)

According to the NDA these life extensions will have a very limited effect on total spent fuel quantities - less than 2.5% of total remaining inventory. (8) Nevertheless it indicates a cavalier attitude by the UK to its international commitments to reduce radioactive discharges as soon as possible.

At the moment, the Magnox Reprocessing plant is unable to achieve the required throughput to meet even the new 2016 closure date. Extending the lives of Oldbury and Wylfa means all the spent fuel will not be removed until around March 2015, adding tremendous pressure to the work load of the Magnox reprocessing plant in its final months. According to the NDA at least 4,700 tonnes of spent Magnox fuel remains to be reprocessed. (9) This means it needs to reprocess around 800 tonnes a year to finish by 2016/7, but it is unlikely to manage more than about 400 tonnes for the next few years due to technical problems with waste processing. The end of magnox reprocessing in 2016/17 would not mean an end to discharges from the plant. The Post Operative Clean Out (POCO) will result in further discharges (albeit at a lower level than operational discharge) for a further 4-5 years – i.e. beyond 2020.

As far as the THORP reprocessing plant is concerned the 2006 Strategy made clear the NDA's determination to fulfil its contractual obligations to reprocess spent fuel on behalf of overseas and UK customers. But the plant was due, at the time, to complete these contracts by 2010. Decisions would then have to be made about what to do with un-contracted spent fuel from UK reactors. A full life-cycle assessment on the implications of spent fuel management was due to be carried out.

The discovery that a quantity of highly radioactive liquor had leaked inside the plant in April 2005, (10) led to Thorp being shut-down for nearly two years. More recently the limited capacity available for treating reprocessing effluents has placed heavy restrictions on its throughput (11) and it was closed again for seven months during 2009. (12) It is now likely to be at least 2016/17 before it completes its commercial contracts.

The NDA says its current strategy is to continue reprocessing overseas and UK spent fuel which it is contractually committed to reprocess, and then to stop. All spent fuel arising from British Energy's seven AGR stations is despatched to Sellafield, but only about half of it is under contract for reprocessing. For the rest it is up to the NDA to decide whether to reprocess it or store it (until it can be placed in a deep geological disposal facility). So currently the NDA strategy would be to store the half of AGR spent fuel it is not contractually committed to reprocess.

However, in March 2010 the NDA produced a discussion paper on options for the management of spent oxide fuel. (13) The options considered included reprocessing all AGR spent fuel. Since the lifetime of the AGRs will extend beyond the predicted lifetime of Thorp, this would require either major refurbishment of Thorp and associated plant, new contracts with overseas reprocessing facilities or the building a new reprocessing plant. Another option would be to reprocess as much of the oxide fuels as possible by operating Thorp for as long as practicable. The NDA is now carrying out a 'lifecycle assessment' to decide the most cost effective option for spent oxide fuel - whether it should be declared a waste; reprocessed or stored for a while before a final decision is made. It expects to identify its preferred option in the next 18 months.

On the Sellafield MoX Plant (SMP), the 2006 Strategy stated that the NDA was discussing with the Government the arrangements for returning foreign-owned plutonium as MOX fuel, but if SMP is unable to meet its expected operational targets, consideration would have to be given to alternative arrangements. The plant was designed to manufacture 120 tonnes of mixed plutonium and uranium oxide fuel every year, for overseas customers, but has only managed to produce about 10 tonnes in 8 years at a cost to the taxpayer of more than £1bn. In May this year the NDA announced a deal with ten Japanese utilities who want all of the 12 tonnes of plutonium belonging to them which is stored at Sellafield converted into MoX - provided that extensive modifications and the installation of new equipment – funded by the Japanese – can get the plant working properly. (14)

The NDA's Draft Strategy fails to recognise that its plan to maximise income – including "*extensive use of our existing reprocessing ... facilities"* could be in conflict with the priority of "*delivering a reduction in risk* and *hazard*". There is no discussion about environmental principles – such as concentrating and containing radioactive waste in preference to diluting and dispersing it – in order to resolve conflicts between risk and hazard reduction and cost effectiveness. Unfortunately this means techniques which have no monetary value attached to them, such as discharging radionuclides into the marine environment, take precedence over other waste management techniques, such as developing new long-term storage techniques.

(1) Briefing on the Nuclear Decommissioning Authority's Consultation on its Draft Strategy and Draft Environmental Report. Nuclear Free Local Authorities Radioactive Waste Policy Briefing No.13, September 2005. http://www.nuclearpolicy.info/docs/radwaste/RWB13.pdf
(2) UK strategy for radioactive discharges 2001 – 2020, DEFRA, July 2002. Annex 1. http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/radioactivity/rad_dischargestrat1.pdf
(3) Ibid para 7.3.3
(4) NDA Strategy, April 2006 http://www.nda.gov.uk/documents/upload/NDA_Final_Strategy_published_7_April_2006.pdf
(5) UK Strategy for Radioactive Discharges, DECC, July 2009 page 91. http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/radioactivity/1_20090722135916_e_@@_dischargesstrategy.pdf
(6) Reuters 23rd August 2010 http://www.reuters.com/article/idUKLDE67M0TE20100823?type=companyNews
(7) Daily Post 10th September 2010 http://www.dailypost.co.uk/news/north-wales-news/2010/09/10/wylfa-passes-another-hurdle-in-bid-to-extend-operating-life-55578-27239247/
(8) NDA Draft Strategy, published for consultation September 2010, para 3.2.1 http://www.nda.gov.uk/documents/upload/Draft-Strategy-published-September-2010-for-consultation.pdf
(9) Magnox Operating Plan (MOP) including August 2010 Addendum http://www.nda.gov.uk/documents/loader.cfm?csModule=security/getfile&pageid=19072
(10) See Nuclear Installations Inspectorate report at: http://www.hse.gov.uk/nuclear/thorp.htm
(11) Wearing Thin: Sellefield's High Level Waste (HLW) evaporators in trouble again. Cumbrians Opposed to a Radioactive Environment (CORE) Briefing 06/09. 23rd October 2009 http://www.corecumbria.co.uk/newsapp/briefings/briefsmain.asp?StrNewsID=268
(12) Thorp to close for Seven Months, CORE Press Release 3rd June 2009 http://www.corecumbria.co.uk/newsapp/pressreleases/pressmain.asp?StrNewsID=261
(13) Topic Strategy: Oxide Fuel, NDA March 2010 (Doc No. SMS/TS/C2/G0/001) http://www.nda.gov.uk/documents/upload/Draft-Oxide-Fuel-Topic-Strategy-gate-0.pdf
(14) See "Japanese attempt to rescue Sellafield MoX Plant", NuClear News No. 19, June 2010. http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo19.pdf

9. Spreading Low Level Waste Around

The Nuclear Decommissioning Authority (NDA) has published its finalised UK Strategy for the Management of Solid Low Level Radioactive Waste (LLW) from the Nuclear Industry, following a consultation which ran from June to November in 2009. (1)

The background to this is that the July 1995 policy (2) "*not to encourage greater use of controlled burial by the nuclear industry*" on landfill sites, was superseded in March 2007 by a new Government White Paper on Low Level Waste Policy which said it "*...sees no reason to preclude controlled burial of radioactive waste from nuclear sites from the list of options to be considered in any options' assessment*". (3) As a consequence there has been a proliferation of proposals to permit low level radioactive waste to be dumped on various landfill sites around the country. (4)

Leading waste management firms such as the French-owned Sita group and the American company, EnergySolutions, are trying to press ahead with plans to use landfill facilities in Cumbria at Keekle Head and Lillyhall for dealing with waste from Sellafield and elsewhere. (5) Sita is proposing to bury

one million cubic metres of low level nuclear waste at Keekle Head with 12 lorry loads of waste arriving at the site every day for 50 years. The waste would include rubble, contaminated soil, contaminated concrete, overalls, gloves and boots. The lorries would not be just from nearby Sellafield but also from other parts of the UK, causing unreasonable disturbance and risk to the local population. The Company accepts that if their planned dump goes ahead there will be risks to local people or "receptors", as radioactivity will dissolve, get into the water supply – and may reach the local population. (6)

Villagers in Northamptonshire are campaigning against the use of the landfill site at King's Cliffe for radioactive waste from the nuclear industry. (7) Augean, the company that operates the landfill, wants to accept contaminated rubble from decommissioning sites around the country. The firm says 30,000 tonnes a year in large plastic construction bags is earmarked, initially from the former nuclear research plant at Harwell, near Oxford. Northamptonshire County Council Development Control Committee unanimously rejected Augean's application to dump Low Level Nuclear Waste in the King's Cliffe landfill on 16th March 2010, but Augean appealed against the decision. (8) A public inquiry will start on 26th October 2010. (9)

(1) NDA 26th August 2010 http://www.nda.gov.uk/news/llw-strategy.cfm
(2) Review of Radioactive Waste Management Policy: Final Conclusions, Cm2919, HMSO July 1995, para 117.
(3) Policy for the long term management of solid low level radioactive waste in the United Kingdom, DEFRA, DTI and Devolved Administrations, March 2007. Para 19 http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/radioactivity/llw-policystatement070326.pdf
(4) Low Level Waste Dump Proliferation. NuClear News No.12 November 2009 http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo12.pdf
(5) Low Level Waste Dump Proliferation, NuClear News No.18, May 2010 http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo18.pdf
(6) Carlisle News and Star 27th April 2010 http://www.newsandstar.co.uk/news/nuclear-waste-dump-would-cause-unreasonable-risk-claims-copeland-green-candidate-1.700597 and Get Noticed Online 26th Apr 2010 http://www.getnoticedonline.co.uk/news/general-news/copeland-candidate-objects-to-nuclear-waste-plan.html
(7) BBC 23rd October 2009 http://news.bbc.co.uk/1/hi/england/northamptonshire/8321112.stm
(8) See Kings Cliffe Waste Watchers website: http://www.kingscliffewastewatchers.co.uk/
(9) Northamptonshire County Council 12th August 2010 http://www.northamptonshire.gov.uk/en/councilservices/Environ/planning/planapps/Pages/CurrentAppeals.aspx

10. Nuclear Subsidies Listed

Chris Huhne has been repeating his nuclear mantra to the *Whitehaven News:* "*There will be no subsidy for new nuclear power stations... it will be for private sector energy companies to construct, operate and decommission new nuclear plants*." So here, thanks to Dr David Lowry, are some of the more egregious subsidies currently enjoyed by the commercial nuclear industry, as revealed in a series of written answers to various MPs in the past two months in the UK Parliament. (1)

- The Nuclear Decommissioning Authority directly commissions research in support of its management mission. In 2010-11 its research budget is £11million.
- The Engineering and Physical Sciences Research Council's (EPSRC) current nuclear research portfolio totals £8.5 million, and in 2008-09 the Research Council's UK Energy Programme spent £1.7million on eight projects "*directly relevant to long-term nuclear waste management and facility decommissioning*".
- The Natural Environment Research Council meanwhile has allocated £676,000 for 2010-11 and £2.6 million in future years to decommissioning and waste management research, and in 2009-10 it provided funding of £277,000 to projects in this area.

- In the same financial year, the Environment Agency spent some £180,000 in grant aid on regulatory research relevant to nuclear waste and decommissioning (approximately 25 per cent of the research costs in that year).
- As a member of the OECD Nuclear Energy Agency (NEA) the UK pays an annual subscription of around £0.6 million (depending on exchange rates) and also subscribes to the NEA's Databank, at a cost of £350,000 a year.
- In 2007-08 the NDA provided £5 million to support the establishment of Energus (formerly referred to as The Nuclear Academy) as a centre of excellence for skills, training and business support.
- The UK allocated and paid a total of just under US$ 9.3 million and 16.4 million Euros to the UN atomic watchdog, the International Atomic Energy Agency, for 2010. A similar sum, but allowing for inflation, exchange rate differences, and the likely outcome of current ongoing budget negotiations among member states and the agency, has been set aside for 2011. The UK has paid a total of 116.95 million Euros and US$ 84.42million to the IAEA over the past 10 years.
- The Government's Office for Nuclear Development – responsible for facilitating new nuclear build in the UK – has a total budget for 2010-11 of £3 million. These figures do not include the Department's wider work on policy associated with nuclear security, safety and non-proliferation.

The most significant, but ultimately unquantifiable, subsidy enjoyed by nuclear operators is the limitation on liability in post major radiological accident situations (such as Chernobyl in Ukraine in 1986, which has cost Ukrainian and other European taxpayers conservatively US$ tens of billions to date). The Government is currently working on amendments to the 1965 Nuclear Installations Act to implement changes to the Paris and Brussels conventions on limitation of liability, agreed in 2004. These changes set a minimum operator liability of 700 million Euros but there is discretion to set a higher limit or have it uncapped. In the circumstances the Government is reviewing the limitation of operators' liability and will consult later this year.

Further information on subsidies by the Energy Fair Group, available online at:
http://www.mng.org.uk/gh/private/nuclear_subsidies1.pdf

(1) Whitehaven News 22nd September 2010 http://www.whitehaven-news.co.uk/letters/you-say/divert-the-10m-to-hospital-we-will-all-need-to-use-it-some-day-1.760807?referrerPath=letters