

Stop Hinkley and the Sedgemoor Green Party present:

'Nuclear NO Build at Hinkley!'

Top consultant speaks on risks of new reactors

Monday 13th October, Bridgwater

John Large will give an illustrated presentation that provides an up to date prediction of the radiological consequences of a severely damaging incident at Hinkley Point, this being the first time since 1982 that a revised radiological impact assessment for PWR has been publicly aired.

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Consultation meetings

Our public meeting is timed to occur just before a series of meetings organised by British Energy and EdF on the siting of new reactors at Hinkley.

The relevant Government department (DBERR) has stipulated that nuclear operators must consult with the local public as part of their national consultation on the factors for deciding on new nuclear sites.

They have listed some criteria as either 'exclusionary' or 'discretionary' to assess whether any particular site should go forward to the next stage and be considered for local consideration by the Infrastructure planning Commission. The IPC replaces the previous Public Inquiry such as the Hinkley C inquiry in 1988-89.

The criteria are as follows:

Exclusionary:

- Seismic
- Capable of geological faulting
- Demographics

Discretionary:

- Flooding
- Tsunami, storm surge coastal processes
- Proximity to hazardous industrial facilities
- Proximity to civil aircraft movements
- Sites of ecological importance
- Areas of amenity, cultural heritage, landscape value
- Size of site to accommodate construction, operation and decommissioning
- Access to suitable sources of cooling

Public meetings:

"Hinkley new build?"

Please try to attend one of these local meetings.

Check the Stop Hinkley website (www.stophinkley.org) and this leaflet to inform questions you might ask.

Oct 20 Mon: St. Mary's Church Centre, **Nether Stowey**. *Public meeting starting at 6.30pm, preceded by a public exhibition between 4pm and 6pm*

Oct 21 Tue: Bridgwater College (new name), **Cannington**. *Public meeting starting at 6.30pm, preceded by a public exhibition between 4pm and 6pm*

Oct 28 Tue: Bridgwater and Albion RFC, **Bridgwater**. *Public meeting starting at 6.30pm*

Oct 29 Wed: Otterhampton Village Hall, **Combwich**. *Public meeting starting at 6.30pm*

Nov 6 Thu: Princess Hall, **Burnham-on-Sea**. *Public exhibition between 12 noon and 8pm*

Nov 8 Sat: Danesfield C of E School, **Williton**. *Public exhibition between 10am and 4pm*

Nov 12 Wed: Victory Hall, **Stogursey**. *Public exhibition between 2pm and 8pm*

Nov 15 Sat: **Bridgwater** Town Hall. *Public exhibition between 10am and 4pm.*

Due to anticipated demand, people are asked to register their attendance for the public meetings in advance. You can register online (See Stop Hinkley Website, Events page for link) or by freephone on 0800 980 3195. Anyone wishing to attend the public exhibitions may simply turn up during the advertised times.

Both: Proximity to military activities

If you feel that you could make points on these issues, you are urged to write to DBERR with your views. Please ask for the 'Strategic Siting Assessment' consultation document by contacting: 0845 015 0010 (local rate) or emailing a request to: ssacriteria@berr.gsi.gov.uk

You can also download the consultation papers at:
<http://www.berr.gov.uk/consultations/page47143.html>

Closing date for responses is November 11th.

DBERR hopes to announce the new criterion at the end of the year, inviting potential operators or builders to officially nominate specific sites next year. The decided sites are expected to be announced in 2010.

Design Assessment

The UK Nuclear Installation Inspectorate (NII) is engaged in a process to license new reactor designs which are all foreign.

The Generic Design Assessment process is expected to take three and a half years, after which the new planning process will kick-in and operators can apply to build a licensed reactor at a designated site.

Two designs have been withdrawn from the four starters: CANDU, a Canadian design and General Electric-Hitachi just two weeks ago. This leaves just the Westinghouse AP1000 reactor at 1000 MW and the AREVA EPR a 1600 MW reactor, discussed above.

German utility E.ON has shown interest in building an EPR at Oldbury, where Westinghouse has also expressed interest. E.ON has already agreed a 1600 MW connection with National Grid for the Gloucestershire site.

The following describes some of John Large's points:

Hinkley C & D

Based on EdF's undertaking that two European Pressurised Reactors (EPRs), will be commissioned at Hinkley Point, the radiological health consequences of these larger nuclear plants will be analysed taking into account upwards revisions to the causal factors linking radiation dose to health detriment, the larger core mass of nuclear fuel, the increased irradiation or burn-up of uranium fuel rendering it more radiotoxic, and the impact of MOX (plutonium) fuelling, all in account of the lessons learnt from Chernobyl.

The modelling and analysis will draw upon the outcome of highly confidential terrorist attack exercises carried out on nuclear plants in the United States, it will assume the same capabilities of the terrorist to penetrate the security at Hinkley Point, seek out the vulnerabilities of the nuclear plant, and to contrive effective means by which a radioactive release will take place. For the radioactive dispersion and consequences the European standard COSYMA software has been deployed, together with NOAA satellite data to provide real time imaging of the dispersion and radioactive fall-out in the aftermath of the release.

The analysis and projections for Hinkley Point will be expressed in terms of the risk of any one individual sustaining health harm in the aftermath of a radioactive release and, related to the increased health risk from the larger EPR plant operating with a greater extent of irradiation (burn-up) and/or with a plutonium based fuel core, the need to extend both the range and resources allocated to the local authority off-site plan (under the Radiation (Emergency Preparedness and Public Information) Regulations 2000)

Background

The present operational nuclear power station at Hinkley Point B comprises two Advanced Gas-Cooled Reactors (AGR) but plans announced (24 September 2008) by EdF at its takeover of the present Hinkley operator British Energy, suggest that of the 4 European Pressurised Reactor (EPR) nuclear plants that it has planned for the UK, two will be built alongside the existing nuclear plants at Hinkley Point, with the other two at Sizewell, Suffolk.. The first EPR is planned to be in electricity

generation by 2017 so, with the expected retirement of the fault ridden and troubled existing Hinkley AGRs within a few years, the spare electricity distribution grid capacity from Hinkley strongly favour this first EPR being commissioned at Hinkley Point.

Compared to the AGR reactors, each of 600MWe capacity, the EPR is rated at about 1,600MWe generating capacity. With a projected operational life of 60 to 65 years, the EPR nuclear plant is capable of utilizing uranium based nuclear fuel to much higher irradiation (burn-up) levels and also of being fuelled with plutonium based fuel (MOX).

Official projections

In 1982 the then National Radiological Protection Board (NRPB but now part of the Health Protection Agency) published the results of its comprehensive analysis into a radiological incident at the proposed Sizewell B pressurised water reactor (PWR) nuclear power station. For this analysis it was assumed that a severely damaging incident would rupture the reactor containment dome (*containment failure*) giving rise to a very significant release of radioactivity into the environment, yielding a maximum of 2,600 (130 probabilistic expected value) or so deaths in the short term and around 31,000 (3,300 expected) deaths in the longer term.

This projection of health detriment assumed that countermeasures would be judiciously implemented, including the speedy evacuation of about 300,000 (24,000 expected) members of public from the locality around the Sizewell site. However, for its mortality and morbidity projections the NRPB relied upon the then ICRP 26 standard that is now superseded by the universally adopted ICRP 60 recommending a x4 increase in the causal effect of radiation exposure, so much so that the 1982 analysis is now considered to be an *under-estimate* of the potential consequences of such a release.

Post-Chernobyl changes

The next projection for the radiological consequences of a PWR reactor accident carried out in the UK was in 1988 for the PWR nuclear plant proposed at Hinkley Point in Somerset. For this study, obviously in account of the Chernobyl disaster two years earlier, the damage and worse case incident considered to be credible comprised a very limited release of radioactivity with the reactor containment remaining intact throughout and following the incident, thereby constraining the radioactive release to a *containment bypass* for which no early or longer-term deaths were projected.

For the EPR the designer, AREVA, reckon that the nuclear plant is entirely protected from accidents and malicious acts that could result in significant release of radioactivity. In making this claim AREVA place extraordinary reliance on its failsafe engineered systems and containment, so much so that, in the very worst and most severe incident, the release would be limited to just 0.03% of the reactor fuel radioactive inventory. Put another way, over the six days following the explosion at the Chernobyl Unit N° 4 reactor, it is reliably estimated that at least 30% of the total reactor fission product radioactivity released uncontrolled into the atmosphere. The equivalent worst case reactor incident release from an operational EPR at Hinkley Point would, according to AREVA, result in no more than $(6 \times 0.03\%) = 0.18\%$ of the radioactive inventory.

John Large is the Chief Executive of Large & Associates, a company of consulting engineers based in London that specialises in the nuclear field. He is a Chartered Engineer, a Fellow of the Institution of Mechanical Engineers, a Graduate Member of the Institution of Civil Engineers, a Member of the British Nuclear Energy Society and a Fellow of the Royal Society of Arts. From the 1960s to the 1990s, he undertook full time research for the United Kingdom Atomic Energy Authority (UKAEA) on reactor systems.

www.stophinkley.org

www.southwest.greenparty.org.uk



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