

# Nuclear Information Service

Ibex House 85 Southampton Street  
Reading RG1 2QU United Kingdom

tel/fax: +44 (0)118 327 7489 e-mail: [office@nuclearinfo.org](mailto:office@nuclearinfo.org) <http://nuclearinfo.org>

Dr Mike Weightman  
HM Chief Inspector of Nuclear Installations  
Office for Nuclear Regulation  
Redgrave Court  
Bootle  
Merseyside L20 7HS

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Dear Chief Inspector,

I am writing on behalf of the Nuclear Information Service (NIS) in relation to the review of the accident at the Fukushima Dai-ichi nuclear power station in Japan and its implications for the UK nuclear industry which the Secretary of State for Energy and Climate Change has asked you to conduct.

In your statement dated 29 March 2011 about the review you announced that you would like to receive submissions from all those with technical information about the accident in Japan and thoughts about lessons that can be learnt to enhance nuclear safety in the UK. NIS wishes to respond to your invitation and would like to make the following points which we hope will assist you in your review.

## **1. Naval Nuclear Propulsion Programme**

The scope of your review should not be limited to the civil nuclear energy sector and should include military nuclear reactors used on board Royal Navy's submarine fleet, as this is probably an area of higher risk which is subject to less public scrutiny than the civil nuclear sector.

Concerns have been already expressed by both yourself and the Defence Nuclear Safety Regulator about safety issues associated with the current PWR2 reactor design employed by the Royal Navy ('Successor SSBN. Safety Regulators Advice on the Selection of the Propulsion Plan in support of the Future Deterrent Review Note. Report to the Defence Board meeting dated 26 November 2009 released under the Freedom of Information Act. Available at <http://bit.ly/eIIGON>). This report states that the UK's nuclear powered submarine programme currently falls short of current relevant good practice. It notes that pressurised water reactors are potentially vulnerable to a loss of coolant accident, and that whereas civil power plants have systems for safety injection of coolant into the reactor pressure vessel head and passive cooling systems, the Royal Navy's submarines compare poorly to these benchmarks. Although a new reactor design is expected to be used in the 'Successor' submarines which are intended to replace the current Vanguard class submarines, Astute, Trafalgar, and Vanguard class submarines using current PWR2 designs are scheduled to remain in service for many years to come.

Furthermore, activities such as shiplift operations, power range testing at dockyard berths in urban areas at Barrow and Devonport, and combat operations pose unique risks to Naval nuclear reactors which are not experienced in the civil sector.

NIS therefore requests that your review considers the risks associated with nuclear powered submarines and that you report to ministers on whether these risks justify the continued operation of the Navy's submarine fleet and if so, what precautions are necessary to minimise risks.

Although it is Ministry of Defence policy to adopt safety arrangements which are so far as is reasonably practicable at least as good as the requirements of the legislation, the findings of the Haddon-Cave review and annual reports on safety within the Ministry of Defence (<http://bit.ly/fXszl2>) suggest that this policy remains an aspiration which is not reflected by current performance. To bring about an improvement in standards NIS considers that defence exemptions to the Nuclear Installations Act 1965, the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPPIR), and the Radioactive Substances Act 1993 should be removed, and that the Naval Nuclear Propulsion Programme should be brought into the civil nuclear regulatory regime, with the Defence Nuclear Safety Regulator becoming part of the new Office of Nuclear Regulation (ONR) to ensure consistent standards across military and civil programmes. We also consider that the ONR should allocate more resources to this area of work in order to be able to fully monitor and assess the implications of developments with the Naval Nuclear Propulsion Programme.

## **2. Nuclear safety regulation in the UK**

The UK's approach to nuclear safety regulation mirrors that of the international nuclear safety regulation regime and shares similar codes of practice, standards, and assessment procedures with the international regime. The regulatory regime in Japan was based on the same basic approach to regulation which is used in the UK, but was clearly insufficient to prevent the accident at Fukushima. We consider that a key issue exposed by the Fukushima emergency was the institutional failure of the international nuclear regulatory system to prevent the accident from happening, and that nuclear regulation therefore requires a more stringent approach.

The approach taken by the nuclear industry to probabilistic risk assessment under which events which are considered to be so infrequent as to be incredible are discounted from regulatory consideration means that countermeasures and safety systems to cope with such events are considered to be unnecessary. Because the earthquake and tsunami and the subsequent chain of events that caused the Fukushima accident were considered to be incredible, insufficient safety systems were in place to prevent an accident which had not been planned for from happening.

The existing approach to nuclear regulation, based on probabilistic risk assessment, failed the acid test of preventing the Fukushima emergency, and because the same approach to regulation is taken in the UK an unforeseen combination of events could likewise lead to a nuclear emergency in this country. We therefore consider that a root-and-branch reassessment of nuclear safety culture and regulation is necessary. The review which you are undertaking needs to address specific steps which should be undertaken to address the impact that unlikely but plausible events such as a large aircraft crash; hostile military action or terrorist attack; tsunami or extreme weather event; and combinations of unexpected events and systems failures would have on nuclear sites in the UK.

### 3. Emergency planning arrangements

Both the emergency planning arrangements which underpinned the response to the accident at the Fukushima-Dai-ichi nuclear power station and the communication of information to the public about the accident have been the subject of controversy and criticism, and so it is important that the review of the UK nuclear industry considers whether emergency planning arrangements in this country and the degree to which they are tested are adequate.

NIS is concerned that emergency arrangements for use in the event of a nuclear accident are not tested sufficiently often in live exercises. Although extensive tests of command and control arrangements take place on a regular basis, field tests of emergency plans are far less common. Field tests not only play an important role in ensuring that systems, resources, and emergency equipment are adequate but also help in ensuring that members of the public – and not just responding agencies - are aware of and understand emergency arrangements and public protection precautions. They provide a tangible demonstration of whether emergency arrangements work effectively, thereby engendering public confidence in the authorities and industry, as well as allowing arrangements for the communication of safety information to the public to be rehearsed.

NIS therefore requests that the forthcoming review considers whether the frequency of live field tests of emergency plans at each nuclear site is adequate, and also considers the broader issue of whether any revisions to the REPPiR regulations are needed in the light of the Fukushima accident to ensure they are adequate to protect the public.

Associated with the issue of emergency planning and communication is the need for effective stakeholder engagement at nuclear sites. NIS considers that the current level of engagement remains low, especially at military nuclear sites, and that efforts by the industry to establish dialogue tend to be focused on a limited range of preferred stakeholders, often from the government sector, who are disinclined to provide frank feedback or criticism to the industry. Members of the public, the media, and non-government organisations have different perspectives and are aware of information which more 'establishment' stakeholders are not familiar with, and downplaying their views or limiting their involvement in dialogue helps create 'blind spots' which allow risks to be missed.

Finally, NIS agrees with and has signed up to the 'NFLA / NGO's Joint Statement of Demands of the UK Government, Nuclear Regulators and the Nuclear Industry after the Fukushima Incident' which was sent to you on 28 March 2011 by the Chair of the Nuclear Free Local Authorities. We commend the recommendations outlined in this statement to you and request that you also address these issues in your review.

Please do not hesitate to contact me should you require any more information about any of these points, or if NIS can be of any further assistance to you in conducting your review.

Yours faithfully,

[signed on original]

Peter Burt  
Director