

Fukushima Nuclear Accident: Implications in the UK – Publication of the Final Report of the Weightman enquiry.

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Summary and Recommendation:

On 14th March 2011 the Secretary of State (SoS) for Energy and Climate Change requested HM Chief Inspector of Nuclear Installations to examine the circumstances of the Fukushima accident in Japan on 11th March. A report highlighting initial findings was published in May which formed the subject of a report to the Strategic & Nuclear Energy Board in September.

The purpose of this report is to appraise Members of the scope of the findings of the final report published on 11th October 2011 as they relate to the nuclear agenda for Copeland and its communities.

1. BACKGROUND

This report provides:

- A summary of the findings of the Chief Nuclear Inspector's final report on the implications of the accident for the UK nuclear industry.

2. Findings of the Weightman Review

- 2.1** The Chief Nuclear Inspector's final report was published on 11th October 2011. A copy of the summary of the final report is attached as Appendix A. Also attached as Appendix B is a copy of the Ministerial Statement to the House of Commons issued on 11th October.

3. Overview

The press release from the Department of Energy and Climate Change (DECC) about the publication of the final 'Weightman Report' states that:

"Additional information received since the interim report ... has reinforced and further validated the findings of the interim report. Dr Weightman's final report found that:

- There is no reason to curtail the operation of UK operating sites, although operators should continue to follow the founding principle of continuous improvement.
- There are no fundamental weaknesses in the UK nuclear licensing regime or the safety assessment principles that underpin it ...
- The final report also confirms Dr Weightman's advice ... that he saw no reason to revise the strategic advice given by the regulators on which the Nuclear National Policy Statement was based, or any need to change present siting strategies for new nuclear power stations in the UK.
- The UK practice of periodic safety reviews of licensed sites provides a robust means of ensuring continuous improvement ...
- The events at Fukushima reinforce the need to continue to pursue decommissioning of former nuclear sites with utmost vigour and determination.
- The regulator is satisfied with the responses and plans initiated by the Government and nuclear industry in response to the interim report."

The summary of the final report confirms that "the direct causes of the nuclear accident at Fukushima, a magnitude 9 earthquake and the associated 14m high tsunami, are far beyond the most extreme natural events that the UK could be expected to experience" (page v).

The report states that "the basic cause of the accident was thus that the site was not designed with adequate protection against some foreseeable natural hazards" (para 754, p137). In particular, the report highlights the statement in the report of the Japanese government that:

"compared with the design against earthquake, the design against tsunamis has been performed based on tsunami folklore and indelible traces of tsunamis, not on adequate consideration of the recurrence of large-scale earthquakes in relation to a safety goal ...".

In response to concerns that it may be premature to draw conclusions before the full details of the accident have been established, the final report states:

Uncertainties about the technical details of the accident do not, however, prevent us from drawing conclusions about its causes and about the subsequent emergency response both on-site and in the surrounding area. Above all, we should to seek to draw early lessons wherever we can and to ensure those lessons are put into action in the UK as soon as possible. Although sufficient was known by the time the Interim Report was finalised to enable us to draw out key conclusions and recommendations, the additional information that has become available in the intervening period has enabled us to review, validate, refine and supplement these as appropriate. We will continue to review and act upon any detailed technical information that emerges from future scientific analysis of the accident or subsequent research. (para 716, p129)

On the implementation of interim recommendations, the final report states that:

Given the nature of the recommendations and the relatively short timescale since they were made, at this stage the Office for Nuclear Regulation (ONR) expects the industry to be developing plans and projects to address the recommendations and has met the licensees to confirm this. None of the recommendations have yet been completed; however, an appropriate degree of progress is evident. (para 552, p100)

The final report makes a number of additional recommendations. Amongst these is a new recommendation that will be of specific interest to local authorities:

Recommendation FR-5: The relevant Government departments in England, Wales and Scotland should examine the adequacy of the existing system of planning controls for commercial and residential developments off the nuclear licensed site

The rationale for this recommendation can be found in para 794, p145 of the final report.

4. Specific Areas of Interest

4.1 Severe accident preparedness and nuclear emergency planning

The final report contains a considerable amount of discussion about the need for improvements in severe accident preparedness and nuclear emergency planning.

On severe accident preparedness it states that:

Although extreme events have a very low assessed probability of occurrence, we believe that the industry should consider how it might respond and manage its plant in extreme circumstances... we would expect industry to identify potential strategies and contingency measures for dealing with situations in which the main lines of defence are lost. (para 831, p154)

The industry needs to ensure it has the capability to analyse severe accident progression to the extent necessary to properly inform and support on-site severe accident management actions and off-site emergency planning. This may require further research and modelling development ... (para 833, p155)

The review of Severe Accident Management Guidelines (SAMG) should consider not only critical safety functions prioritisation, but also whether and how SAMGs support any dynamic re-prioritisation based on emerging information. Consideration should also be given to operator support requirements relating to tactical and strategic decision making. In addition to the acute phase of a severe accident, consideration also needs to be given to stabilisation, recovery and clean-up, and the personnel involved from the many organisations involved. (para 836, p156)

The final report acknowledges that:

- It is clear from the Fukushima event that the accident was significantly outside of what is covered by the SAMGs, and that the guidance was not adequate to cope with multiple plant failures. (para 504, p90)
- In the UK, it is typical to rehearse the operation of the emergency organisation, including external agencies and services. However, it is not typical to exercise severe, long timescale, multiple hazard events affecting multiple units, involving large numbers of people. (para 508, p90)
- The clean-up and recovery activities are continuing at Fukushima, some months after the acute phase of the accident. IAEA have noted good practices relating to the Fukushima clean-up and recognise that there are lessons to be learnt in this area. Generally, in the UK, there is no detailed consideration given to the resources and facilities required, and co-ordination and control of such activities. This is of particular importance in terms of the arrangements for radiological monitoring and protection of workers, and the need to train many contract workers who may have little or no familiarity with the hazards on a nuclear site. (para 511, p91)

On nuclear emergency planning, the final report explains (paras 543 – 547, p96) that the Nuclear Emergency Planning Liaison Group (NEPLG) has conducted an initial review of emergency arrangements with particular regard to dealing with a prolonged event similar to the devastating one at Fukushima. This is in direct response to Recommendation IR-3 of the Interim Report.

It explains that DECC has the lead department role in bringing together organisations involved in off-site nuclear emergency preparedness and response through the NEPLG. The initial review conducted by NEPLG focused in particular on four key areas: radiation monitoring capacity and capability and co-ordination including radiation monitoring units co-ordination, food and the environment; central government response; extendibility (see below); and capacity and capability of emergency services including emergency exposures.

The report notes that: “NEPLG found current arrangements to be fit for purpose. In light of the events in Japan, however, a number of opportunities for strengthening arrangements have been identified. A programme of work has been instigated to address the issues found to require strengthening.” It adds that the opportunities identified by NEPLG will form part of a wider programme of work being taken forward by DECC. The timelines for this programme (and any work NEPLG does) will be finalised in October, and will be taken forward by the department as a priority. This will include updating DECC’s published guidance on the UK’s response to an overseas nuclear incident by December 2011.

It should be noted that discussion about nuclear emergency planning often focuses on the size of the detailed emergency planning zones (DEPZs) around a licensed nuclear site (see the overview in the annex to this briefing). The final report states that: “The radii established for emergency planning zones must, of course, depend on the radiological releases that are considered reasonably foreseeable and the practicability of implementation of the emergency plans. However, as it is considered that licensees should review on-site measures to improve resilience to severe accidents in the light of the Fukushima accident, it follows that the practicability and effectiveness of the arrangements for extending countermeasures beyond a small DEPZ in the event of more serious accidents should also be reviewed. It is therefore considered that NEPLG should examine the need to enhance the UK’s extendibility arrangements for extending countermeasures beyond the DEPZ in the event of more serious accidents.” (para 793, p145)

The Interim Report indicated that there is a need to consider extending some emergency exercises in the UK to include severe accident scenarios. The extensive and extended nature of the Fukushima accident high-lighted areas where improvements may be made through exercising in real time such matters

as handover arrangements, sustainability of resourcing, the provision of technical advice in short timescales (tailored to the needs of the different recipients) and the vital role of communications and the acquisition of reliable data.

The final report states that as a result (para 590-592, p105), ONR has initiated a review of the existing programme of exercises to evaluate how changes to exercise scenarios supported by longer exercise duration will permit exercising in real time such matters as hand-over arrangements etc. It will also look closely at how automatic decisions taken to protect the public can be confirmed and supported by plant damage control data. It will then make recommendations on what should be included in an appropriate UK exercise programme for testing nuclear emergency plans. Relevant guidance will be provided. ONR aims to produce a report on this review by the end of the year.

- 4.2** Members will be aware of the considerable press coverage that resulted from publication of the final report. ONR and DECC press releases are available on their respective websites.

The final report states that: “Given the timescales.... and the full response to our recommendations, we have decided to produce a further report in about a year’s time which will provide an update on progress in implementing the lessons for the UK’s nuclear industry.” (page xvii)

The report also notes that:

“... points from Fukushima resonate with the lessons from major events in a range of sectors (e.g. loss of the space shuttle Columbia, explosion at the Texas City oil refinery, loss of the Nimrod aircraft over Afghanistan). The persistent nature of such lessons across a wide range of sectors and countries highlights to all those with responsibilities for safety, and its regulation, the importance of understanding and continually applying the learning. Knowing the lessons is not sufficient; appropriate action needs to be taken and improvements sustained. This is part of a continuous improvement culture.” (para 519, p92)

5. List of Appendices

Appendix A - Executive Summary of Final Weightman Report

Appendix B – Ministerial Statement to the House of Commons 11th October 2011

6. Consultees