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## HEALTH AND SAFETY COMMISSION

### GENERIC DESIGN ASSESSMENTS OF NEW NUCLEAR REACTORS: DIRECTION TO HSE AND MEANS OF COST RECOVERY

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#### Issue

1. Whether HSC should direct HSE to exercise functions under the Health and Safety at Work Act 1974 (HSWA) to undertake generic design assessments of new nuclear reactors.

#### Timing

2. The Government is expected to publish the Energy White Paper later this month, with a further consultation on nuclear power published alongside. HSE has already been approached to begin design specific assessments on four designs as soon as possible. Getting charging provisions in place using the Fees Regulations could take until June, allowing assessment work to begin in July 2007.

#### Recommendation

3. That HSC agrees
  - To direct HSE under s11(4) HSWA to undertake nuclear power station generic design assessments; and
  - To recommend to DWP ministers that the 2007 Fees Regulations are amended to introduce a provision allowing charging for nuclear design assessment work.

## Background

4. In June 2006 HSE responded to growing interest in new nuclear build by putting forward to DTI, as part of HSE's wider Expert Report on new energy technologies, a progressive generic design assessment approach for new nuclear power stations. This approach was developed further and was presented to the Commission at its December 2006 meeting. It was considered that the generic design assessment approach would not only offer benefits to an expansive nuclear industry, but would also reinforce HSE's position as an independent safety regulator. In particular, it would help to separate HSE from the public debate on the merits of new nuclear build and any planning decisions flowing from that, and allow it to focus on the regulatory/technical issues related to a specific design. At the December meeting the Commission noted HSE's view that the proposed approach strengthened its position as an independent regulator with a focus on protecting workers, the public and society, by ensuring that it had sufficient time to address regulatory and technical issues relating to a design, in advance of and separate from any public planning inquiries based on a site specific proposal.
5. Guidance on HSE's approach to undertaking generic design assessments for new nuclear power station designs was published in January 2007. This divided the generic assessment process into 4 steps (see Annex 1), which would constitute Phase 1 of a two phase process. Phase 2 would be the site specific licensing assessment which would commence following completion of Phase 1 and receipt of a licence application.
6. HSE has already undertaken project planning work preparatory to the start of design-specific assessments and has a small team of staff engaged on this. HSE has so far received a formal request from one nuclear power station designer/vendor to begin Phase 1, and firm expressions of interest relating to three other power station designs.
7. As generic design assessments are not in response to site specific applications made under the Nuclear Installations Act, HSE cannot use the provisions of that act to undertake the work or to recover its costs. To do this it is therefore necessary for HSE to employ its more general powers under the HSWA.

## Argument

8. In order for HSE to be in a position to begin to conduct generic design assessments, HSE considers it necessary for HSC to first direct it under section 11(4) of the HSWA to exercise on behalf of HSC the function conferred on the Commission by s11(1) of that Act. A draft direction is attached at Annex 2.
9. Although the Government has expressed itself in favour, in principle, of new nuclear build, it has yet to establish a firm policy on whether to take facilitative actions to support it. It is expected that the Government will undertake a comprehensive public consultation on this later this year. It is prudent in HSE's

view for it to make a start on the first steps in the generic design assessment process in order to allow it to respond quickly to a positive outcome of the Government's consultation processes. In particular it is reasonable to move ahead now because:

- An early start will allow HSE to maximise its ability to secure the protection of society - workers and the public - in the future when considering proposed design, without reducing its focus on nuclear safety at operating nuclear sites.
  - By beginning preparatory work at this stage HSE will be better placed to manage anticipated work flows over coming years.
  - No staff will be taken from site inspection or other work to secure the safety of existing operating nuclear facilities without back-filling of those posts, and staff can readily be moved from generic design assessments if needed on higher priority work.
  - Starting Step 2, basic design assessment work in June/July is sensible pre-planning for one possible outcome of the Government's consultation later in the year. Such pre-planning enables a gradual build up of committed resource which can be drawn from across NII as it becomes available, or as recruitment provides additional capability. Whilst, depending on the outcome of the Government's consultation the work may prove nugatory, it would be more damaging to other nuclear safety priorities if Nuclear Directorate were unable to pre-plan and then needed to pull inspection staff out at short notice to handle a peak of design assessment work which it had not anticipated or planned for.
  - Maximum use is being made of staff moved back into Nuclear Directorate from other HSE policy, research and strategy functions. Recent recruitment from elsewhere in HSE also allows flexibility in reallocation of existing Nuclear Directorate staff.
10. Subject to the HSC Direction, it is, in HSE's view, reasonable to use a relatively small number of inspectors for the assessment of new reactor designs in Step 2, in advance of a settled Government policy decision. HSE could not, however, justify the diversion of a larger pool of inspectors which would be necessary for the more detailed Step 3 and 4 assessments. Consequently, HSE proposes that in advance of the Government's policy being settled, its generic design assessment work will go no further than the completion of Step 2 assessments.
11. HSE need to begin staff recruitment now to be in a position to move to Step 3 later this year or early in 2008.
12. This is a sensitive policy area and ensuring HSC/E's position as an independent safety regulator is critical. The Commission will wish to base its decision on its view of the reasons set out in paragraphs 8-11 above.

## **Consultation**

13. The Executive, with legal and financial advisers, have endorsed the recommendations in this paper.

## **Presentation**

14. It is possible that issuing a Direction may be criticised by some. However, the Commission's discussion on this will ensure public consideration of the proposal and will also allow HSE to optimise the use of its resources.

## **Financial/Resource Implications for HSE**

15. It is important that HSE is able to recover the costs of any work it undertakes on generic design assessments. Work associated with a specific design assessment can currently only be charged to existing licensees under s24A of the Nuclear Installations Act 1965 where those licensees are or will be seeking a design assessment. It is proposed that the Fees Regulations 2007 be amended to allow HSE to charge the relevant design assessment applicant for the costs of any assessment where that applicant is not a current licensee or an applicant for a licence. The Commission was informed in December (HSC/06/99) that draft provisions for charging for nuclear design assessments had been prepared.

## **Environmental and Other Implications**

16. None.

## **Action**

17. That HSC agrees
- To direct HSE under s11(4) HSWA to undertake nuclear power station generic design assessments; and
  - To recommend to DWP ministers that the 2007 Fees Regulations are amended to introduce a provision allowing charging for nuclear design assessment work.

## SUMMARY OF HSE's NUCLEAR POWER STATION GENERIC DESIGN ASSESSMENT PROCESS

1. HSE's expert report to the Government's 2006 Energy Review proposed that it would revise and update its procedures for granting a licence for the start of construction. HSE proposed a two-phase process: the first phase would be a review of the safety features and ultimate acceptability of a nuclear reactor design as the basis for granting a nuclear site licence. If successful, this would lead to the issuing of a statement of 'Design Acceptance' by HSE, which would remain valid for a number of years. The second phase would involve an applicant seeking a nuclear site licence to construct such a reactor at a specific site.

2. The Government's Energy Review report, published in July 2006, welcomed HSE's proposals, and asked HSE to develop a system for assessing nuclear reactor designs, and to publish guidance early in 2007. That guidance was published in January 2007.

3. Proposals for building new power reactors in the UK would be subject to a 2 phase process:

- Phase One, Design Acceptance, is HSE's assessment of the safety case for a generic design, leading to issue of Design Acceptance Confirmation if the outcome is positive.
- Phase Two, Nuclear site licensing, is HSE's assessment of the application for a nuclear site licence and is thus site, reactor type and operator specific.

4. This process is presented in the table with approximate timescales. Phase One is divided into 4 steps. These steps, which culminate in the issuing of a Design Acceptance Confirmation.

Phase One: Design Acceptance		
Step	Process	Approx Timescale
1	Design and safety case preparation based on generic site envelope	Requesting party is responsible
2	Fundamental safety overview	3-6 months
3	Overall design safety review	6-12 months
4	Design Acceptance Assessment	Up to 2 years
Phase Two: Nuclear Site Licensing		
	Site licence assessment, with subsequent issue of site licence if application is judged to be acceptable	6-12 months

## KEY FEATURES OF THE PROCESS

### **Step 1 – Design and Safety Case Submission Preparation**

Step 1 is the preparatory part of the design assessment process. The bulk of the work will be undertaken by the requesting party in assembling the safety submissions for Step 2. It also involves discussions between the requesting party and HSE to ensure a full understanding of the requirements and processes that will be applied.

### **Step 2 – Fundamental safety overview**

Step 2 is an overview of the fundamental acceptability of the proposed reactor design concept within the UK regulatory regime. This step may take from 3 to 6 months. The aim is to identify any fundamental design aspects or safety shortfalls that could prevent the proposed design from being licensed in the UK. It will also introduce HSE inspectors to the fundamentals of the design and provide a basis for planning subsequent assessment.

#### *Step 2 – HSE Output*

- A public HSE statement on whether any fundamental safety issues had been identified that might prevent Design Acceptance in the UK or that have to be addressed to secure acceptance.
- A short report to support this statement.
- Confirmation that HSE will move to Step 3.

### **Step 3 – Design Safety Overview**

Step 3 is a broad HSE review of the safety aspects of the proposed reactor design. This step may take from 6 to 12 months. The general intention will be to move from the fundamentals of the previous step to an analysis of the design, primarily by examination at the system level and by analysis of the requesting party's supporting arguments. The specific aims of this step are:

- To improve HSE knowledge of the design.
- To identify all significant issues.
- To identify whether any significant design or safety case changes may be needed.
- To identify major issues that may affect design acceptance and attempt to resolve them.
- To achieve a significant reduction in regulatory uncertainty.

The exact scope and focus will depend on the design and on the outcome of Step 2.

### *Step 3 – HSE Output*

- A public HSE statement on the adequacy of the assessed safety features of the design, including safety issues with the potential to lead to significant design or safety case changes, or to prevent successful Design Acceptance.
- A report to support this statement.
- Confirmation that HSE will move to Step 4.

### **Step 4 – Design Acceptance Assessment**

Step 4 is an in-depth HSE assessment of the safety case and generic site envelope submitted. This step may take about 2 years.

The general intention of this step is to move from the system level assessment of Step 3 to a fully detailed examination of the evidence, on a sampling basis, given by the safety analyses.

The aim of this step is:

- To confirm that the higher level claims such as system functionality are properly justified.
- To complete sufficient detailed assessment to allow HSE to come to a judgment on if a Design Acceptance Confirmation can be issued.

The exact scope and focus will depend on the design and on the outcome of Step 3.

### *Step 4 – HSE Output*

- A public HSE statement providing a Design Acceptance Confirmation (if the design is judged to be acceptable).
  - A report to support this statement.
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**Direction under section 11(4) of the Health and Safety at Work Act 1974**

1. In pursuance of an authorisation given by the Health and Safety Commission on [ ] 2007 and on the Commission's behalf, I hereby direct the Health and Safety Executive ("the Executive") to exercise, on behalf of the Commission, the function conferred on the Commission by section 11(1) of the Health and Safety at Work Act 1974, by virtue of section 1(c) of that Act, as regards assessing any design proposal.

2. In this Direction-

(a) "design proposal" means —

a proposal for any new nuclear installation, including matters relating to the installation's construction, commissioning, operation and decommissioning, which is to be assessed prior to any application to the Executive for a licence under section 1(1) of the Nuclear Installations Act 1965 which may be made based upon that design proposal; and

(b) "nuclear installation" means a nuclear reactor or an installation within the meaning of section 1(1)(b) of the Nuclear Installations Act 1965.

Signed

Chairman  
Health and Safety Commission  
Date