

<b>Meeting Date:</b>	15 May 2007	<b>Open Gov. Status:</b>	open
<b>Type of Paper:</b>	Below the line	<b>Paper File Ref:</b>	
<b>Exemptions:</b>	None		

**HEALTH AND SAFETY COMMISSION****HSC Coordinated Programme of Nuclear Safety Research for 2007/08  
(Supplementary advice from HSE)**

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**Board Member: Dr Mike Weightman**

**Cleared by Geoffrey Podger on 3 May 2007**

**Issue**

1. The Nuclear Safety Advisory Committee (NuSAC) provides advice on the Nuclear Safety Research (NSR) Programme in Paper HSC/07/41 to HSC. This has some criticism of Nuclear Directorate's oversight of its NSR programme, mainly related to resourcing. HSE provides some advice on this matter in Paper HSC/07/40. This supplementary paper provides further information particularly on measures HSE is taking or planning.

**Timing**

2. That HSC considers this paper with papers HSC/07/40 and HSC/07/41.

**Recommendations**

3. That HSC notes the efforts made to address the NuSAC research sub-committee's concerns, and the need to target nuclear inspector resources.

**Background**

4. The background of NSR is provided in Paper HSC/07/40. NuSAC reviews the NSR through its Sub-committee on Research (SCR). In its review of the proposed programme for 2007/08 it has reservations about the overall quality of the NSR for operating nuclear power reactors although at the same time it was complimentary of the working of the NSR arrangements in relation to Waste and Decommissioning. The SCR is concerned that NII resources put into NSR in general may not be sufficient to ensure an adequate and balanced programme. The SCR has two specific concerns:

1. Insufficient resources are being put into maintaining the quality and currency of the Nuclear Research Index which is prepared and maintained by ND and underpins the operating reactor programme.
  2. Specifically in the human factors area, expected items of new research have not been commissioned.
5. The SCR puts a heavy reliance on the technical updating of the Programme and to quote from its advice to HSC, "it believes that ND will be unable to guarantee the quantity and quality of research on nuclear safety and that this will become even more probable if new build puts further pressure on NII".

### **Argument**

6. ND is acutely aware of its nuclear inspectorate shortage but is having to give priority to using its available nuclear inspector resource on front line activities. However it is also aware of its responsibilities for ensuring an adequate programme of nuclear safety research in the UK and continues to do what it can to ensure these responsibilities are not put at risk by a shortage of inspectors.

7. Resourcing - The amount of staff effort used does require careful interpretation but in global terms it shows nuclear inspectorate resource has halved on research over the last 4 years although some of this reduction will reflect a reduction in research requirements for an increasingly mature reactor technology. For the production of this year's NRI and research strategies that are about to take place, it is intended that nuclear inspectors will continue to be used wherever front line activities allow, to draw upon their regulatory experience and interactions with the licensees to identify areas for nuclear safety research. Maximising use of HSL and external contractors will be made by the ND Research Unit to maintain the quality of the NRI, and where appropriate increasing use will be made of NuSAC and its membership to identify gaps.

8. Overall quality - ND has used an outside contractor with technical understanding and experience on nuclear safety to provide a more in-depth critical review of the NRI. This work confirms that:

- research on waste and decommissioning covering Magnox plants and Sellafield and Dounreay sites is proceeding well;
- reactor research in the key areas of structural integrity steels, chemistry, control and instrumentation, nuclear physics and criticality and probability safety assessment is well-defined and proceeding as planned;
- power reactor research in the key areas of civil engineering and external events, plant modelling, fuel and core and reactor physics, the research is proceeding as planned but that the issues need to be more clearly defined in the NRI. This updating of the NRI has been completed by the contractor and agreed with the nuclear inspector.
- reactor research in the important area of graphite is proceeding as planned but that ND needs to take steps to clarify the issues in the NRI. It is proposed that the Graphite Technical Advisory Group undertakes this task with

oversight by the relevant nuclear inspector.

9. Human factors - Specifically research in this key area is proceeding but it is unclear that all the licensees are addressing all the new issues. ND has now established a human factors Nuclear Topic Group (NTG) and the NTG will review the research needs in this area with some urgency and agree a way forward with the appropriate licensees. Action has been taken recently to increase ND's complement of human factors resource as part of the transfer of specialist resources from elsewhere in HSE to develop into nuclear inspectors. Additionally work has been on-going to build on synergies by working with others in HSE interested in human factors research. Also, the Chief Scientist is to take stock of human factors research and to do so through a review workshop which will include the nuclear programme. The outcome of this exercise will be to determine what we know, the synergies we can gain, what are the key questions and priorities and how we can get value for money. Also this work should aim to identify ways to encourage the industries to share their knowledge.

## **Conclusions**

10. The following conclusions can be drawn:

1. Nuclear Inspector resourcing applied to research has been halved. This reflects the priority that has had to be given to front line activities.
2. Overall there is an adequate and balanced programme that covers all areas and all the appropriate licensees.
3. Key areas needed updating to reflect current position. This has been largely achieved by the use of an external contractor.
4. Review of human factors research, and the updating of that part of the NRI, will take account of synergies from greater working with the rest of HSE.
5. In future greater use of external resource (HSL and outside) will help maintain the currency and quality of the Nuclear Research Index.