NuSAC/RG6/07/M1

HEALTH AND SAFETY COMMISSION

NUCLEAR SAFETY ADVISORY COMMITTEE

REVIEW GROUP 6 (RESEARCH)

Minutes of the 1st Meeting of the Nuclear Safety Advisory Committee Review Group 6 (Research) 2nd October 2007 at HSE, Redgrave Court, Bootle

Present:

RG6 Members	HSE
Dr P Manning (Chair)	Dr P Storey
Dr R Taylor	Dr H Starkie (Secretary)
Dr R Dolby	Mr P McDonald (HSE Chief Scientist)
Prof R Bloomfield	Ms S Patel (NuSAC Secretariat)
Dr A Muir	Ms E Ridsdale (For Item 4)
Prof R Grimes	
Dr P Haigh	

Licensees	Others
Dr M Johnston, BE	Dr N Smart, NDA
Dr P Harston, BNGSL	Mr S Walsgrove, DBERR
Dr M Tearle, Magnox Electric Ltd	Ms F Rayment, Nexia Solutions (Item 5)
Ms J Lloyd, UKAEA	Mr J Mathieson, NDA (Item 8)

Apologies:

Mr I Giles, MoD	Dr R Ainsworth, BE
Mr S Daniell, Magnox Electric Ltd	**Mr G Munro***

* Following the meeting we were advised of the sad news that Gordon Munro had died.

1. Introductions and Apologies for Absence

1.1 For the benefit of first time attendees, Mr P McDonald, Ms S Patel, Mr M Johnston and Mr M Tearle, the other attendees introduced themselves.

1.2 Apologies were received from Dr R Ainsworth, Mr S Daniell and Mr I Giles. Mr G Munro was unable to attend due to ill health.

2. Approval of the Minutes of the 40th Meeting of NuSAC/SCR

2.1 Subject to an amendment to paragraph 4.1.4, these Minutes were approved.

3. Matters Arising from Previous Meeting

3.1 All outstanding Actions from the 40th Meeting of NuSAC/SCR had been completed or had been placed on the Agenda of this meeting.

4. HSE Input to the 2008-09 Programme

4.1 Haydn Starkie gave a PowerPoint presentation that described the review of the NRI that had been undertaken by a contractor in response to concerns expressed by NuSAC/SCR at its meeting in February 2007. This review focussed on general updating and quality rather than technical matters. However, this review not only resolved the issues raised at the February meeting but had also enabled the 2007 update of the review to be undertaken in all technical area sections except Human Factors. Peter Storey commented that the NRI applies only to current generating licensees. This review and update illustrated that in most technical areas, a more strategic way of presenting ND's concerns was more appropriate on account of the maturity of the technical area. Haydn Starkie's presentation also discussed the 2007 updates to the Sellafield and Decommissioning Licensee Research Strategy Statements and described progress with the commissioning of the 2007-08 HSE Levy programme.

4.2 Elaine Ridsdale explained that the Human Factors programme was undergoing a fundamental review because of developments in the area since the 2005 Human Factors workshop, for example organisational effects on human performance. Human Factors apply throughout the life cycle of any nuclear facility. Hence ND's Human Factors Nuclear Topic Group felt that a 'universal' Human Factors research strategy should be developed that would apply equally to all current and potential future nuclear licensees. The Topic Group's objective is to develop this strategy in time to enable the licensee 2008-09 research programmes to be developed and to have this strategy included in the 2008 NRI.

4.3 RG6 asked what determines the programmes' participation in International research programmes. Peter Storey replied that the levy funded international research programme is only part of the programme. Licensees had their own programmes through collaboration with other operators and membership of research clubs such as EPRI. He recommended that HSE and the Licensees should present a joint paper outlining an integrated international research strategy to the spring 2008 RG6 meeting (Action 07/1).

4.4 In response to Elaine Ridsdale's presentation on the Human Factors programme, RG6 asked how the Human Factors programme addressed safety culture. Elaine Ridsdale answered that the programme's requirements were designed to address those concerns that were most salient to ND's Human Factors specialists. However, these specialists do maintain intelligence on wider human and organisational factors issues. Neil Smart asked where research (meaning underlying knowledge) was needed in Human Factors rather than applying existing knowledge. Elaine Ridsdale replied that barriers to implementation of existing knowledge were an important Human Factors issue. RG6 commented that the review group wanted to see an emphasis on why things we already know as being good practise are not implemented. Peter Storey added that a dialogue with the industry was needed to identify which of the identified issues had a research

solution. Paul Harston recommended that NDA send a representative to the proposed ND/Industry Human Factors workshop in November (Action 07/2).

4.5 RG6 commented that good progress had been made in identifying what topics were in progress, but wished to see a paper on the extent of implementation, the barriers, and what to do about it (Action 07/3).

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5 Capability Needs

HSE Position

5.1 Peter Storey opened the discussions by giving a UK overview of the position regarding the availability of nuclear skills and recent initiatives such as the National Skills Academy for Nuclear, the National Nuclear Laboratory and the EPSRC's Keeping the Nuclear Option Open (KNOO) initiative that had been established to address the decline in the availability of nuclear skills in the UK since the break up of the UKAEA, CEGB and BNFL. He then described how ND currently accesses the skills it needs to support its regulatory activities. RG6 remarked that when Nexia Solutions was being formed from BNFL's R&T division, ND had insisted that some of R&T's capability should be retained in BNFL. Peter Storey commented that this was a regulatory issue and arose from the need for the licensee to maintain intelligent customer capability where it made use of expertise from outside its own organisation. RG6 expressed the concern that civil new build and decommissioning activities should not divert resources away from research that is needed to support operating sites.

British Energy View

5.2 Michael Johnston presented British Energy's position on its University Research Alliances, as part of addressing capability needs. This view first looked beyond purely the needs of the company to the bigger UK-wide picture. He noted that scarce UK skills are mobile and could be lost and

much of the skills base is vested in an ageing workforce. However he pointed out that strategic planning by the key players in the UK and initiatives such as the Nuclear Engineering Doctorate scheme, could address some of these concerns. The presentation was rounded off by a description of how British Energy used alliances with a number of universities to provide some of its research and technical support needs.

5.5 RG6 remarked that people's technical skills could be passed on to successors. However, there was also the need to preserve key facilities such as the Wythenshawe Boiler Rig and B13 at Sellafield. Michael replied that British Energy regard research as a means of supporting its safety case needs which also serves to help in developing skills. As part of its research activities, the company kept an eye on facilities and the boiler rig benefits from a substantial maintenance spend. Peter Storey added that the need to maintain facilities was discussed and where necessary a way forward agreed with licensees. Where agreement with a power reactor licensee could not be reached, ND had the powers to act unilaterally, as it had done to support graphite capabilities when British Energy and Magnox Electric emerged from Nuclear Electric. ND was developing arrangements to make sure NDA-supported facilities that were essential to its area of operation were available.

5.6 RG6 asked what view British Energy took regarding the use of the independent research and technology sector, such as TWI, to provide for its research needs. Michael Johnston answered that on average about 25% of the company's research and technical support expenditure was with universities. It varies from year to year. The remainder was with industry bodies such as TWI and consultants. Steven Walsgrove asked about access to European facilities. Michael replied that British Energy have access to the Petten Materials Test Reactor in the Netherlands. Steven Walsgrove then asked about support for the BTC facility if B13 became unavailable. Fiona Rayment answered that if B13 were lost, BTC would only be able to pick up that facility's work for small samples.

NDA Position

5.7 Neil Smart reported that support for research and the maintenance of skills was one of the requirements placed upon the NDA by the Energy Act. He developed his presentation to show how NDA determined what activities should be supported by its Site Licensee Companies (SLCs) and which ones it would support directly itself. Neil rounded his presentation off by describing the key part that NDA was taking in a number of skills initiatives such as the National Nuclear Skills Academy and support for the National Nuclear Laboratory. RG6 remarked that NDA's arrangements were well thought out and were encouraging when looking to the future, before adding that his concern was making sure that there was enough knowledge to address current problems.

5.8 Neil replied that responsibility for maintaining operational skills, including post operational clean out and decommissioning, rests with the SLCs. Paul Harston added that the capability required by Sellafield Ltd. would be identified and addressed through the Life Time Plan, the TB&URD and through Intelligent Customers who were technical experts on the sites. NDA is the contract holder for the SLCs and conducts technical governance reviews to see how effectively sites control their decision making processes. The results of these reviews are reported to the NDA Research Board. Paul Harston added that following feedback from stakeholders on last years TB&URD the current document being produced will be reviewed locally to improve the levels of technical governance. RG6 asked how many skilled graduates were needed each year just to maintain the AGRs and the NDA role. Neil Smart replied that he did not know the numbers but heavy investment was needed just to replace those that were being lost to the industry.
(Secretary's note: After the meeting Paul Harston sent RG6 copies of links to the COGENT and the Coverdale work on skill requirements and graduate numbers)

The National Nuclear Laboratory

5.9 Steven Walsgrove reported that since the Secretary of State had announced the establishment of a National Nuclear Laboratory (NNL), DBERR had been leading a project team including NDA, BNFL and Nexia Solutions to develop a business model for the laboratory. The NNL would meet the needs of 'customers' within industry, the public sector and academia rather than being centrally controlled and funded. The Laboratory would be built around the facilities owned by NDA and the staff within Nexia Solutions, currently part of BNFL and managed as a Government-owned Contractor Operated (GOCO) organisation. Contractual terms were still being developed. He added that a workable business model was needed which would satisfy state aid and other legal requirements. This model was expected to result in a move towards full economic cost pricing. This would ensure that the NNL competed on an equal footing with other research and technical solution providers, who had expressed concern to the project that the NNL would be allowed to compete unfairly for future contracts.

5.10 Fiona Rayment commented that arrangements for the National Nuclear Laboratory needed to be resolved before Nexia Solutions employees move because of uncertainty about their futures. Steven Walsgrove said that the project recognised this concern and was moving as fast as possible towards a resolution. RG6 remarked that it had become a difficult job for Nexia to maintain its skills base and wanted to know who would be held accountable for what happens to Nexia and its skills base. RG6 further commented that no one appeared to be taking the high level view of the Laboratory's needs and arrangements. Fiona Rayment added that the Laboratory needed a balanced portfolio of work to maintain short-, medium- and long term skills needs and highlighted that it is challenging to maintain this using a free market model. RG6 suggested a subscription model was one way to address this issue. RG6 then asked how the free market model could make the National Nuclear Laboratory resilient to uncertainties and surprises. Paul Harston asked for example if MoD put more money into the NNL, would this affect the priority given to work done for the NDA and its SLCs who may not have the funds of

MoD. RG6 was concerned about accountability for ensuring the technical base was actually in place, particularly with the experience of AEA(T) in mind.

The Nexia Solutions Position

5.11 Fiona Rayment presented an overview of the UK skills needed to support the nuclear fission reactor operations and the waste and decommissioning programme, as seen from within Nexia Solutions. She reported that in some specialist technical areas of engineering and science, skill levels had fallen to the minimum numbers of practitioners necessary to provide viable support to the industry. The need for continuing availability of these skills would continue for several decades, necessitating their continuing renewal. 650 people are currently employed by NEXIA, including 450 technical.

5.12 RG6 commented on whether the Fusion research programme should be transferred to the NNL. The consensus of the meeting was that such a transfer would not benefit the well-established arrangements for managing the Fusion programme. RG 6 (PH) then reinforced Fiona's view about skill levels in some areas having fallen to minimum levels and expressed the view that the NDA direct portfolio of work should focus on supporting these skills. RG6 (PM) added that Nexia's B709 facility at Springfields had done a good job in processing trace-active wastes from the site and believed that Nexia solutions should retain this small-scale processing capability.

The Universities' Perspective

5.13 Robin Grimes (RG6) presented an overview of the various initiatives to develop nuclear skills in universities. These initiatives include the EPSRC-led KNOO programme in which a consortium of seven universities is undertaking a number of research programmes of direct interest to the nuclear industry. The Nuclear Engineering Doctorate Scheme extends this initiative by

including partnerships between key players from the nuclear industry and the participating universities and includes socio-economic as well as physical science and engineering research programmes. Under this scheme, the postgraduate student will spend three-quarters of their time in industry working on their chosen project. Nuclear Technology Education Consortium (NTEC) is an initiative led by the Dalton Nuclear Institute across a number of universities to provide masters-degree level qualifications in Nuclear Technology, Decommissioning or Environment and Safety. Robin also reported on the SPRING project which aims to give a decision support framework for assessing the sustainability of nuclear power against other options. He emphasised that for these initiatives to be successful, input from the nuclear industry and its regulators was essential. EPSRC did not have the skills to make fully informed decisions on its own.

5.14 RG6 asked how we could ensure that PhDs or Eng. Docs. would want to stay on in the UK nuclear industry after obtaining their qualifications. Robin Grimes suggested that if the postgraduate students were given opportunities during their training period in industry, they would get 'comfortable' and want to stay on after obtaining their qualifications. RG6 expressed the opinion that the Eng. Doc. Programme was a good way of achieving this.

6 New Build Research

6.1 This presentation was prepared by Alex Miller but presented to the meeting by Peter Storey. HSE is in the initial stages of a generic design assessment for four reactor types. To support the later stages of this assessment, ND is arranging technical support contracts and information exchange agreements with regulators in the USA, France and Finland. It is too early to know what specific research ND will need to support its assessments. This is likely to become clear once ND has assessed what research has already been undertaken by the vendors and overseas regulators and will be commissioned either to fill gaps in knowledge identified by ND's assessment process or to confirm independently, claims made by the vendors.

7 The HSE Making Best Use of Science (MBUS) Project

7.1 Patrick McDonald, the HSE Chief Scientist, reported that a recent Office of Science and Technology review of HSE's management of science, by the ten key attributes that underpin good practice in the use and management of science, by government departments, was found to be good. Nonetheless, improvements in the way HSE plans, procures and delivers its science were identified during the HSE Fundamental Review in 2006. The MBUS project was established to address this by requiring that no research projects should go ahead without a clear view of how the outcome will support the aims of HSE businesses.

7.2 RG6 asked how HSE would decide whether to commission research itself rather than expecting the industry to do it. Mr. McDonald answered that HSE would commission work where it was difficult to expect the duty holder to do it, for example industries dominated by a large number of small businesses. For other industries such as offshore, HSE would seek a joint venture with the industry. Mr. McDonald added that HSE was very limited in what research it could procure from the wider research community before commenting that he was impressed with the way the Nuclear Programme was addressing its skills issues. He added that it is his role to advise Government that HSE has access to the science it needs, and to fulfil this requirement he needed to talk to NuSAC. RG6 agreed to consider how Patrick McDonald should interact with NuSAC (Action 07/4).

8 International Waste Management Research and Collaboration

8.1 John Mathieson gave a presentation about NDA's RWMD (formerly Nirex) involvement in international research programmes related to the design and performance of a geological waste repository. RWMD has collaborated in the EU 6th and this will follow on in the EU 7th Framework programmes related

to geological disposal of radioactive waste, including the CARD (Geological disposal), CATT (Technology transfer), PAMINA (Performance assessment), COWAM (stakeholder engagement), FUNMIG (migration of radioactive species) and ESRED (Engineering of waste repositories). RWMD also has bilateral research arrangements with the USDoE, JAEA and NUMO (Japan), Andra (France), SKB (Sweden), NAGRA (Switzerland) and ONDREAF/NIRAS (Belgium). John pointed out that RWMD gained access to R&D, valued at almost 40 times what they spent to participate in these international programmes.

8.2 RG6 asked if collaboration between Waste Management Organisations was between NDA and its equivalent bodies or whether it should be cascaded to SLCs. John Mathieson agreed that SLCs should be involved but there were contractual issues that needed to be checked. (Action 07/5). RG6 then asked if a TB&URD was needed to enable RWMD to do the research necessary to deliver a repository. John Mathieson replied that RWMD had to start developing a lifetime plan including R&D needs. Neil Smart added that a TB&URD requires a technology baseline to be developed first. The problem with RWMD has been deciding whether issues such as U, Pu and spent fuel deposition should be included in the scope of the repository but the view on these issues is becoming clearer.

9 Future role and topics for RG6

9.1 The Chair of RG6 invited NuSAC and industry members of RG6 and other attendees of the meeting to let him know by 23rd October 2007, what topics they would like to see included in discussions at future meetings (Action 07/6).

9.2 The splitting of Magnox Electric and UKAEA each into two smaller site licensee companies raised the issue of how these small licensees could be represented on RG6 without there being a proliferation of Research Coordinators at the meetings. It was suggested that the Chair of the Nuclear Waste Research Forum (NWRF) could represent these licensees.

(Secretary's Note. This was discussed at the NWRF meeting on 4th October. The consensus was that since all NDA funded research was shared across all SLCs, one Research Coordinator could speak for all of the small NDA SLCs)

10 Evaluation of the HSE and Licensee 2006-07 Nuclear Safety Research Programmes

10.1 The Chair of RG6 invited comments on these papers. Only one comment was received from RG6 regarding a statement in the paper discussing the evaluation of the British Energy programme. This comment referred to a statement in Paragraph 7 of NuSAC/RG6/07/03 that British Energy staff were diverted to major emergent operational issues, resulting in reduced research being undertaken. Michael Johnston for British Energy, agreed to respond to RG6 regarding the importance of the work that had to be deferred as a result of this diversion of staff effort (Action 07/7). RG6 then asked if speculative research work was undertaken by British Energy; Michael Johnston agreed to provide a response on this point as well.

11 Any Other Business

11.1 None

12 Date of Next Review Group Meeting

12.1 Tuesday 22nd April 2008 in Conference Room 6, HSE Redgrave Court, Bootle.

Actions

07/1 HSE & Licensees to present a paper on Integrated International Research Strategy to the second meeting of NuSAC/RG6.

07/2 NDA to send a representative to the Human Factors Workshop in November 2007.

07/3 HSE/Licensees to prepare a paper on Human Factors implementation.

07/4 RG6 Chair to consider how HSE Chief Scientist can interact with NuSAC.

07/5 NDA/RWMD to check whether international collaboration between Waste Management Organisations can take place at the SLC level.

07/6 All to advise the Chair of NuSAC/RG6 by 22nd October 2007, what topics they would like to be discussed in future meetings.

07/7 British Energy to provide a statement to RG6 on the importance of research that has had to be deferred as a result of the diversion of staff to major emerging operational issues.