

## Minutes

### **NIRAB fourth meeting**

21st October 2014, 11:00-16:00

Royal Academy of Engineering, Prince Philip House, London

#### **Attendees:**

##### MEMBERS

Dame Sue Ion	Chair		
Tim Abram	University of Manchester	Bill Lee	Imperial College
Andrew Carlick	DBD Ltd	John Lillington	AMEC
Richard Clegg	Lloyd's Register	Bob McKenzie	Springfields Ltd
Steve Cowley	CCFE	John Molyneux	Rolls-Royce
Graham Fairhall	NNL	Andrew Sherry	University of Manchester
Paul Harding	Urenco	Mike Tynan	NAMRC
Neil Hyatt	Sheffield University	Laurence Williams	CORWM

##### OBSERVERS

Derek Allen	Innovate UK	Robin Grimes	FCO
Melanie Brownridge	NDA	David Senior	ONR

##### OFFICIALS

Tony Ashton	DECC	Rob Moore	Treasury
Ron Cameron	UKTI	Dominic Scullard	BIS
Si Dilks	DECC	Rupert Wilmouth	GO-Science
Paul Durrant	DECC		

##### SECRETARIAT

Gordon Bryan	NIRO	Andy Howarth	NIRO
Andrew Brown	NIRO	Simon White	NIRO

#### **Apologies:**

##### MEMBERS

Mick Gornall	Springfields Ltd
Malcolm Joyce	Lancaster University
Paul Stein	Rolls-Royce
Neil Thomson	EDF Energy
Peter Wylie	Sellafield Ltd

##### OBSERVERS

Jason Green	EPSRC
John Jenkins	ONR
John Perkins	BIS
Sir Mark Walport	GO-Science

## Agenda Item 1 – Welcome and Introductions

The meeting was called to order by the Chair, the agenda for the day was outlined and the minutes from the last meeting (NIRAB-17-1) were accepted as a true record.

## Agenda Item 2 – Actions from Previous Meeting

The actions from previous meetings were reviewed (NIRAB-24-1) and the following reports were received.

*3.1 - Melanie Brownridge to report back on NDA deliberations on the issues associated with establishing a materials archive within the NDA estate.*

Melanie Brownridge reported that as a first stage in developing a strategy for a materials archive NDA has let a contract to identify the potentially valuable materials stored on NDA sites. The output will be a report identifying what materials exist, where they are stored and identifying any risks to their retention. In the meantime the sites have been instructed not to dispose of materials without receiving confirmation from NDA.

*3.2 - NIRO and the sub-group chairs to identify and implement opportunities to engage the wider community. 3.6 - Bill Lee and Andrew Sherry to identify a means of realising the potential for innovation in the academic field.*

Andrew Sherry reported that, to date, the Academic community has been engaged through NIRAB sub-groups, topic workshops and the annual Nuclear Academics Discussion Meeting. Engagement with the academic community will be maintained by:

1. Condensing expertise around focus areas including: fuels, reactors, waste management etc.
2. Hosting regular sub-group meetings and seminars.
3. Continuing to engage with the Nuclear Academics Discussion Meeting.
4. Using the NIRAB web site.

*3.4 - Andrew Carlick to liaise with NDA to identify potential options for harvesting IP from historic UK projects.*

Andrew Carlick reported that he had met with the Chief Executive of the NDA to discuss how Small and Medium Enterprises could extract value on behalf of the UK from existing Intellectual Property (IP). He had outlined a process comprising the following stages:

1. Identifying where appropriate IP exists.
2. Identifying the form that the IP is in.
3. Proposing how the IP could be deployed and value generated.

A paper setting out a proposed process is in draft and will be circulated to members when complete. Andrew agreed to ensure that Melanie Brownridge is kept abreast of the continuing discussion.

*3.5 - Neil Hyatt, Melanie Brownridge, Peter Wylie and Andrew Carlick to identify opportunities to exploit waste management and decommissioning R&D expertise in the international market.*

Neil Hyatt reported that this would be progressed at the next meeting of the Advanced Systems; Recycle and Waste Management Sub-Group.

### Agenda Item 3 – UK Research and Development Snapshot

A draft paper was discussed which presented a partial summary of the current level of industry funding for nuclear R&D (NIRO-26-1). The information was limited in scope to information provided by NIRAB members in relation to their own organisations for FY 2014/15. It excluded any defence programme research spending. The board felt that the R&D snapshot could be improved by:

- Ensuring that all significant industry R&D funders are captured
- Including Government R&D funding such as that provided by Innovate UK and the Research Councils.
- Identifying whether funding primarily supports current operations or the development of future systems.

Nonetheless there was nothing in the information provided which suggested the need for any change to the current NIRAB recommendations. However it was recognised that in future recommendations there will need to be room for flexibility to adapt and respond to opportunities, for example in additive manufacturing.

**Action 4.1: NIRO to update the draft R&D snapshot by the next NIRAB meeting in January to include all significant UK industry funders, Government funding, and to present the results into current and future systems.**

### Agenda Item 4 – Update on NIRAB R&D Recommendations

An update was given on the new sub-group structure; the Advanced Systems and Academic sub-groups will join together as an expanded Advanced Systems Sub-Group providing a framework for industry and academia to work together on advanced systems. In order to provide an appropriate focus to discussions and keep numbers workable the Sub-Group will meet in 3 parts.

- Fuels and reactors.
- Spent fuel management / recycle and the management of associated wastes.
- Integration of the advanced systems elements.

DECC reported that a business case informed by NIRAB's initial recommendations is to be submitted shortly to Treasury. This will seek funding in the Autumn Statement for the period up to March 2016 for nuclear R&D and further technical evaluation of SMR development options.

The business case includes a high ambition option where several existing activities are accelerated and new tasks related to advanced manufacture added (outlined in NIRO-35-1). It was agreed that this option should include aspects of each of the suggested activities.

There was discussion of the rationale for investment now and it was noted, in particular, that the UK would only be welcomed into international collaborations if it has its own R&D programme to bring to the table. Some of the windows of opportunity currently available will close if no action is taken. Members were asked to articulate the benefits of an R&D programme and identify specific reasons to invest now. The information should be sent to NIRO who will collate the arguments and pass them to DECC to support the business case.

**Action 4.2: NIRAB Members to articulate the reasons why Government should fund each aspect of the R&D programme now and to send these to NIRO by 28<sup>th</sup> October.**

NIRO proposed a process by which NIRAB could in future provide advice to Government when requests are made at short notice. This was agreed by the NIRAB members subject to minor amendments. It was suggested that to assist this process, NIRO should identify and prepare discrete packages of work that can be shared with NIRAB quickly when decisions need to be made, and that these are continually refreshed through the work of the sub-groups.

**Action 4.3: NIRO to prepare, by the next NIRAB meeting in January, discrete packages of work that can be implemented at short notice.**

### Agenda Item 5 – Nuclear Data

A paper was discussed which emphasised that access to up-to-date nuclear data is a fundamental requirement for all nuclear applications including both nuclear R&D and current operations. The paper stated it is a matter of serious concern that UK funding for access to the NEA nuclear databank is fragmented across a number of Government departments and industry, and that there is no effective current funding route via the UK Research Councils for applied nuclear data research. This has led to uncertainty regarding access to nuclear data and codes and a marked reduction in academic expertise.

The Chair noted that, on behalf of the Research Councils, she had led a review of nuclear physics and nuclear engineering in 2009. This review highlighted the need for EPSRC and STFC to take a coherent approach to funding in this area. She expressed serious concern that this advice had not been acted on and that researchers have not been able to secure funding. The annual UK contribution to CERN is of the order of £100M, but researchers have been unable to secure the grants required to fund their time and travel costs.

The NEA databank is important to a wide range of organisations in addition to the civil nuclear industry, including MoD, AWE, the Department of Health, the Health Protection Agency and regulators. The Chair stressed the need for Government to find a way of ensuring the sustained funding of the UK subscription and, if necessary, recovering the costs from end users in an efficient manner.

With respect to nuclear data research, it was recognised that the UK must engage effectively with the international community to ensure a strategic and integrated approach to priority areas.

Andrew Sherry agreed to coordinate an articulation of the need for nuclear data on behalf of the nuclear community and a recommendation for international engagement in research.

**Action 4.4: Jason Green to ensure that appropriate measures are put in place to enable EPSRC and STFC to jointly evaluate nuclear data research proposals.**

**Action 4.5: DECC to identify and implement a mechanism that will enable payment of the NEA databank subscription.**

**Action 4.6: Andrew Sherry to coordinate an articulation of why nuclear data is important to UK programmes and to recommend for priority research areas through international engagement.**

### Agenda Item 6 – International Collaborations

Robin Grimes reported that he had recently given an address to the IAEA in which he stated that the UK sees targeted research as a key component to its commitment to further enhance the safety, security and efficiency of nuclear energy. The address also highlighted how the UK has strengthened its approach to international cooperation.

He separately reported that a small group chaired by Prof. Peter Flewitt has been formed to develop a strategy by which UK institutions can collaborate with China in a coordinated manner. It was suggested that the group should include a representative from CCFE.

**Action 4.7: Robin Grimes to ensure that the Nuclear Academic China sub-group involves UK fusion expertise, and to arrange for the group to feed its findings to NIRAB as appropriate.**

A list of inter-government agreements was presented (NIRO-28-1). The list was recognised to be incomplete and several members identified further agreements that they were aware of. It was noted that the extensive nature of even the incomplete list would require judgements to be made on priorities for international collaboration. Tony Ashton invited NIRAB to identify priority opportunities for international collaboration in the event that the application for funds through the Autumn Statement is successful.

**Action 4.8: NIRO to update the list of international collaboration agreements and distribute with the meeting minutes.**

In addition to this, Government has requested information from its embassies on civil nuclear energy activities in their respective areas. This information will be collated and forwarded to NIRAB/NIRO to assist NIRAB in forming an international strategy as part of developing recommendations for the comprehensive spending review.

### Agenda Item 7 – NIRAB Annual Report

NIRAB is required to provide an annual report to ministers on its activities early in 2015. It is proposed that NIRO will draft the annual report on behalf of the board and circulate this draft in advance of the next Board meeting. A possible outline structure of the proposed report was discussed at the meeting (NIRAB-21-1). The following additions were recommended:

- A clear statement of why NIRAB was established.
- Identification of some success criteria and an evaluation of performance against these criteria. This might include, for example, a commentary against the extent to which NIRAB's advice has been acted upon.
- A statement of progress in the year and how this has modified plans for future activity.
- Performance against the Terms of Reference.

The board agreed to the suggested layout subject to these additions and the plan to publish the report in Q1 2015.

**Action 4.9: NIRO to circulate a draft of the Annual report to members by 10<sup>th</sup> December. Members to comment on the draft in advance of the next NIRAB meeting (6<sup>th</sup> January 2015).**

### Agenda Item 8 – Update on SMRs

At the previous meeting the Board was briefed on an SMR feasibility study co-funded by Government and Industry. The report is expected to be published soon and Tony Ashton noted that Government plans to seek the view of NIRAB prior to publication of the report, in particular with regards to the technical risks associated with the various reactor designs.

The Chair cautioned that Government should only allocate a GDA slot to a specific SMR vendor once a sufficiently well-developed design is available to enable ONR to carry out its review.

The focus of the feasibility study is on SMR systems that have the potential to be early to the market and offer opportunities for the UK to participate in the completion of the design. The feasibility study will note that designs or concepts that may reach the market on a longer timescale should be considered by NIRAB. This includes the U-Battery system, which is a micro reactor and could address a different market than that considered by the study.

### Agenda Item 9 – Output from the Medical Isotopes Study

In response to Action 3.7 Bill Lee reported on progress made in addressing the security of supply of medical isotopes in the UK (NIRAB-30-1). It was recognised that there is expected to be a worldwide supply shortage in the short term and there is little that can be done to avert this. Further work is required to assess potential solutions that could be deployed in the medium term. Bill agreed to report back to future meetings. **Action 3.7 remains open.**

### Agenda Item 10 – SME Engagement

In response to Action 3.3 Mike Tynan and Andrew Carlick set out the approach that they propose to take to maximise the potential for SMEs to contribute to innovation (NIRAB-25-1). In summary this will involve engaging a range of SMEs to understand the barriers they currently face in working with the nuclear industry and identifying the different approaches that have overcome these barriers in other industries.

Derek Allen offered to contribute by sharing the experience gained by Innovate UK in working with SMEs. Bill Lee highlighted the opportunity for the academic sector to contribute, pointing out that Imperial College now teaches innovation and has appointed a Chair of Innovation role. **Action 3.3 remains open.**

### Agenda Item 11 – Innovate UK Update

Derek Allen gave a brief summary of the results of the recent competition run by Innovate UK (previously TSB). There had been a significant increase in applications compared to earlier competitions. 26 feasibility studies and 15 collaborative studies will be funded. Seven of the collaboration projects follow on from previous feasibility studies. The Chair recommended that Innovate UK make sure that assessors have visibility of NIRAB recommendations when evaluating future competitions.

### Agenda Item 12 – NIRAB Chair/NIRO Additional Notable Activities

The Chair and NIRO referenced a circulated list (NIRAB-29-1) that summarised stakeholder meetings held since the last NIRAB meeting.

### AOB

Three AOB items were raised:

1. The Chair asked Members to provide feedback directly to her on the performance of NIRO, addressing the following questions:
  - How effective has NIRO been?
  - What has NIRO done that has been useful, and should continue to do?
  - What has NIRO done that could or should stop doing?

- What has NIRO not yet done that it needs to do?

**Action 4.10: (Optional) Members to provide feedback to the NIRAB Chair on the performance of NIRO.**

2. Melanie Brownridge highlighted the fact that the NDA supply chain event will take place on November 6<sup>th</sup> in Manchester.
3. It was highlighted that the NIRAB website will shortly be live and can be accessed at the following address: [www.NIRAB.org.uk](http://www.NIRAB.org.uk)

### **Date of Next Meeting**

The next meeting is scheduled for 6<sup>th</sup> January 2015 in London.