

NDA Research Board

15th October 2014 10:00 – 16:00

Central Hall Westminster, Storey's Gate, Westminster, London SW1H 9NH

MINUTES – Issue 1

Attendees

- 1) Chair of NDA Research Board, Independent
- 2) Director Strategy & Technology, NDA (part-time)
- 3) Head of Technology, NDA
- 4) Head of Research, Radioactive Waste Management Ltd (RWM)
- 5) Chair of RWM Technical Advisory Panel, Independent
- 6) HM Deputy Chief Inspector, Office for Nuclear Regulation (ONR)
- 7) Radioactive Substances Regulation Manager, Environment Agency (EA)
- 8) Radioactive Substances Principal Policy Officer, Scottish Environment Protection Agency (SEPA)
- 9) Head of R&D, Nuclear Generation, EDF Energy
- 10) Chief Technologist, Atomic Weapons Establishment (AWE)
- 11) Head of Integrated Waste Management (IWM), NDA - Invited
- 12) Programme Manager, Nuclear Energy Directorate – Clean up Division, CEA
- 13) Higher Activity Waste (HAW) Strategy Development Manager – NDA – Invited and Technical Secretary
- 14) Director, Nuclear Innovation and Research Office (NIRO) – Observer
- 15) Senior Scientific Advisor, Department of Energy and Climate Change (DECC)
- 16) Co-Chair, Nuclear Waste Research Forum (NWRf), Sellafield Ltd
- 17) Principal Investigator (PI) - Nuclear Champion, Research Council Energy Programme (RCEP)
- 18) Head of Nuclear Fuel Cycle, NDA – Invited
- 19) Deputy Chair of Committee on Radioactive Waste Management (CoRWM) – Observer

Main Purposes of the Meeting

- To confirm members' view of the Spent Fuels R&D Programme and agree the Research Board's Position Statement
- To understand the UK's Integrated Waste Management (IWM) R&D programme with respect to pre-disposal treatment of Higher Activity Wastes (HAW) and, as appropriate, make recommendations or endorse the approach.
- To review the progress of the Nuclear Waste Research Forum (NWRf) Working Groups.

[1] Members Only Discussion

- 1.1 Chair provided an update to members on his recent discussions with NDA regarding the progress to date and performance of the Research Board. Several actions resulted from this discussion. It was agreed it would be useful to have an induction pack of relevant information available for any new Board members. The approach of reviewing specific

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areas to generate position statements was welcomed and in order to draw down on the expertise of Board Members it was agreed that smaller groups could be formed to review and finalise the papers outside of the meetings. NDA will ensure that the recommendations reported to the NDA Board are responded to and relevant documents published in a timely manner on NDA's website.

Action 08/01: Share the Regulatory Interface Protocol – HM Deputy Chief Inspector, ONR by 30/11/14

Action 08/02: Develop induction material for new Board Members – Chair & Head of Technology, NDA by next meeting

Action 08/03: Consider using a small group of members to review and finalise position statements – Chair

Action 08/04: Compare the Research Board Terms of Reference with the NWRP Terms of Reference to ensure compatibility – Head of Technology, NDA and Co-Chair of NWRP, Sellafield Ltd by 31/12/14

Action 08/05: Circulate the action list – Head of Technology, NDA by 30/10/14

[2] Welcome & Apologies

2.1 Chair welcomed everyone to the 8th meeting of the NDARB.

2.2 A number of apologies had been received prior to this meeting:

- Head of Nuclear Energy, Transport, Decommissioning & Waste Management, Directorate for Energy, European Commission
- Head of Radioactive Substances Regulation, EA – Radioactive Substances Regulation Manager attending as nominated representative
- Chief Technical Officer – Existing Nuclear, EDF Energy – Head of R&D attending as nominated representative
- Government Chief Scientific Advisor
- Chief Scientific Adviser for Scotland
- Chief Scientific Advisor, DECC – Senior Scientific Advisor attending as nominated representative
- Chief Scientific Advisor, Department for Business, Innovation & Skills (BIS)
- Chief Scientific Advisor, Ministry of Defence (MOD)
- Chair of CoRWM – Deputy Chair of CoRWM attending as nominated representative
- Director Engineering & Technology Civil Nuclear, Rolls-Royce plc
- Research Manager, NDA – HAW Strategy Development Manager nominated Technical Secretary

1.3 Members of the Board introduced themselves.

1.4 The Chair invited any relevant declarations of interest. The Chair reported that now that the competition for the Parent Body Organisation for Magnox Ltd and Research Sites Restoration Ltd. (RSRL) is completed the Boards have amalgamated. As a Non-Executive Director he is now a Non-Executive Director for this joint Board. The Chair reported that he had no involvement whatsoever in the negotiation of the new contract and, after discussion with NDA, has confirmed there are no potential conflicts of interest relevant to the NDARB.

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[3] Agenda

3.1 The agenda was agreed.

3.2 Three Any Other Business (AOB) items were identified:

- RWM Science and Technology Plan
- NWRF Conference in November
- Waste Isolation Pilot Plant (WIPP) update

3.3 A provisional timeframe and location for the next NDA Research Board meeting was agreed: 14th April 2015 in Central London.

[4] Review of 7th meeting

4.1 Minutes of 6th Meeting

The minutes were approved with no amendments.

4.2 Outstanding actions from previous meetings:

The Technical Secretary reviewed the status of the outstanding actions from the previous meetings.

- **Action 03/05:** Board members to review draft report when circulated and provide comments back to NDA within one month

Resource to complete the NDA Technical Baseline Report has now been recruited and preparation of the report is underway. Action ongoing.

- **Action 03/08:** Chair and NDA to undertake a comparison with the TBUrd output and report back to the Board on its conclusions.

The latest NDA Site Licence Company Technical Baseline and underpinning Research & Development (TBUrd) were submitted at the end of March. Resource to complete this comparison has now been recruited and comparison is underway. Action ongoing.

- **Action 04/03:** Complete

- **Action 06/10:** Respond on implications of report for individual organisations – All by Meeting 7

It is an ongoing process for organisations to review methods of prioritisation and their efficacy. Action Closed

- **Action 06/11:** Respond on current situation in NDA estate – Head of R&D, NDA by Meeting 7

This issue had been discussed at the NDA TBUrd Working Group in September. NDA Estate approach to prioritisation of R&D is driven by the prioritisation of individual projects which in turn are driven by risk and hazard reduction (e.g. High Hazard Programmes at

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Sellafield Ltd have high priority). This R&D is primarily needs driven. Opportunity based R&D is currently limited. Action closed.

A discussion resulted from which the following new actions were agreed.

Action 08/06: Evaluate where R&D funds are being spent to identify whether the funding is directed against the areas where R&D would have the greatest impact. Circulate findings to the Board – Head of Technology, NDA and Co-Chair of NWRf, Sellafield Ltd for discussion at next meeting

Action 08/07: Share current work on TRLs and other metrics e.g. System Readiness Levels – Head of Technology, NDA at next meeting

- **Action 07/01:** Review Terms of Reference of NDA Research Board (NDARB) to highlight independence of NDARB from NDA control – Chair by Meeting 8.

Appropriate amendments highlighting independence had been inserted by the Chair, circulated in advance and were agreed at the meeting by Members. Action closed

- **Actions 07/02 and 07/03:** Complete
- **Action 07/04:** Provide update on ONR approach to research – Head of Research and Business Management Systems, ONR by Meeting 8

HM Deputy Chief Inspector (ONR) provided an update on their recent work to evaluate their approach to Research. It is expected that the Strategy will be released shortly and this meeting will be updated accordingly. This action was closed and the follow action agreed.

Action 08/08: Update the Board with respect to ONR updated strategy and interfaces with this Board – HM Deputy Chief Inspector, ONR by next meeting

- **Actions 07/05, 07/06, 07/07, 07/08, 07/09, 07/10, 07/11, 07/14:** Complete
As part of the discussion regarding the position statement on RWM Research Programme it was agreed that the final recommendations should be made more prominent and the “freeze date” of the paper be consistent with the date of the review, as it is a snapshot in time.

Action 08/09: Clarify final recommendations from Board position paper on RWM Research Programme. Confirm date on paper to account for snapshot in time – Chair by 31/01/15

- **Action 07/12:** Provide further information on scale of the NDA estate's R&D programme on Spent Fuels over the next five years – Head of R&D, NDA, Head of Nuclear Fuel Cycle, NDA and Head of Research, RWM by 30/08/14

Discussions have taken place between Chair, Head of Technology, NDA and Head of Nuclear Fuel Cycle, NDA. RWM have published their Science and Technology Plan and NDA have published their 5 year R&D plan. Action Complete.

- **Action 07/13:** Provide additional information on Sellafield Ltd's R&D programme on Spent Fuels – Co-Chair of NWRf by 30/8/14.

Co-Chair NWRf provided an email and verbal update to the meeting. Action Complete

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Action 08/10: Circulate the spent fuel note to Board members – Co-Chair of NWRP, Sellafield Ltd by 30/11/14 (complete in meeting)

[5] Research Board's View on the Spent Fuels R&D Programme and discussion of draft Research Board Position Statement [NDARB016]

- 5.1 A draft Research Board report on the Spent Fuels R&D Programme had been prepared by the Chair based upon the presentation and members' discussion at the previous meeting. A number of specific edits were recommended.
- 5.2 Members were asked to confirm the recommendations and that the Position Paper was an accurate reflection of their views and the discussions held. Members agreed that the recommendations and the Position Paper were correct but wanted some specific recommendations to be recorded only as observations. The recommendations would form part of the NDARB annual report to the NDA Board and would be considered and responded to as appropriate.
- 5.3 A discussion was held regarding what fuel samples or relevant materials may be needed in future to support the strategy and the wider UK nuclear R&D programme and what the current status is. It was noted that the issue of samples and archiving for R&D purposes is a wider issue that is also being considered by Nuclear Innovation and Research Advisory Board (NIRAB). NDA is currently managing a contract to review the status of material archives on NDA sites.

Action 08/11: Consider whether any relevant comments are required for the Position Paper regarding NDA's archiving strategy for samples – Chair by next meeting

- 5.4 Members agreed to review the amended paper out of committee for final approval.

Action 08/12: Amend the Position Statement on NDA's Spent Fuel R&D programme and circulate to members – Chair by 30/11/14

Action 08/13: Members to provide final approval to the amended Position Paper - All by 31/12/14

[6] Update on NIRAB/NIRO activities

- 6.1 Director, NIRO, provided an update on the recent work of NIRAB and NIRO which is initially focussing on the identification of gaps in nuclear R&D requirements for the UK. As discussed at the last NDARB meeting they are not currently considering existing R&D programmes of work such as those supporting existing generation or decommissioning. The key gaps that have been identified are focussed on supporting future systems. A proposed programme of both capital and programme spend in these areas has been submitted to DECC sponsors for consideration as part of the Autumn Statement. It was noted that the topic of coordination of international collaboration is a significant issue that is yet to be addressed in detail but has been discussed in relation to decommissioning at NDARB previously. Director, NIRO also provided several clarifications including that it is recognised NDA is accountable for the provision of advice to Government on Plutonium Management Strategy Development and Implementation. .

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- 6.2 It was noted that Head of Technology, NDA is an observer to NIRAB and Director, NIRO is an observer to NDARB so there are good links in place to ensure NDARB and NIRAB are working together.

[7] Annual Report from Radioactive Waste Management Ltd's Technical Advisory Panel (TAP)

- 7.1 Chair of TAP, Independent provided an overview the recent TAP Annual Report for FY2013-14. It was noted that this had been discussed as part of the recent review of RWM's research programme.
- 7.2 It was also noted that RWM final reports will be published as part of the RWM bibliography. Chief Technologist, AWE asked for clarification regarding peer review of RWM reports and Chair of TAP, Independent confirmed it is intended that reports that are to be published will all be externally peer reviewed by at least two independent reviewers ahead of publication in the RWM bibliography.

[8] Nuclear Waste Research Forum (NWRf) – update on progress of NWRf working groups

- 8.1 NDARB had reviewed and discussed the NWRf working groups at a meeting 18 months previously [NDARB008]. It was timely to review progress as some groups were in their infancy at the time of the previous review. NDA had prepared a discussion document providing an update on progress of the Working Groups after attending recent meetings of each Working Group. NWRf has 6 working groups with the following foci: Characterisation, Waste Packaging and Storage, Decommissioning, Land Quality, Technical Baselines and underpinning R&D, University Links (the latter two are co-chaired by NDA, the others by NWRf member organisations). These technical areas were identified by both a strategic review of key areas of potential common R&D need and opportunities and also by a detailed assessment of the R&D needs and opportunities captured in the individual Site licence Company technical baselines (Technical Baseline and underpinning R&D (TBuRD)). The latter two groups are more process orientated to facilitate sharing of good practice and improve co-ordination.
- 8.2 Chair noted that the formation of the NWRf and the progress it is making have been significant in bringing together the R&D problem owners in a coordinated way to share R&D needs and opportunities. The benefits of the network that has been created were acknowledged. It was noted that some groups have made good progress whilst others have required a change of membership and direction to give them an appropriate focus.
- 8.3 Members noted that the key benefits of the working groups are not all tangible. A discussion was held on the potential of metrics to help measure the benefits more clearly. Chair noted that metrics must be appropriately focussed on quality of outcomes and not just on, for example, numbers of proposals for R&D identified by the Groups. Chair summarised by stating that the Research Board would like NWRf to provide a prioritised list of issues that they will be focussing on and key targets or outcomes that they are working towards as part of a 2 year forward plan. NWRf were also invited to consider what NDARB support they would like and what metrics they believe may be appropriate. Chair noted that the Working Group outcomes may include production of guidance documents in some areas or good practice guides. Wherever possible, this should be a target, to ensure that the results of the groups' work were preserved and widely disseminated.

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Action 08/14: NWRF co-chairs to consider with NWRF working groups what support they would like from NDARB and what metrics may be appropriate and report outcomes back to NDARB – Co-chairs of NWRF by next meeting

Action 08/15: NWRF co-chairs to ensure that working groups have a prioritised list of R&D needs and opportunities that they will be focussing on and a 2 year forward plan of their activities

[9] Waste Packaging and Storage NWRF Working Group update

9.1 NDA HAW Strategy Development Manager presented an update on the NWRF Waste Packaging and Storage Working Group. This included the structure and organisation of the group as well as the current future planned R&D activities. Members noted the progress in identifying priorities and potential work programmes and encouraged the group to continue with this work.

[10] Presentation and discussion on IWM R&D programme with respect to pre-disposal treatment of Higher Activity Wastes

10.1 Head of IWM, NDA and HAW Strategy Development Manager, NDA had produced a paper ahead of the meeting. A brief presentation covered key points from this paper and the overarching strategy. Chair reminded the group that NDARB had asked specific questions regarding the NDA approach to IWM R&D in this area, namely:

- Question 1: Is the programme soundly based?
- Question 2: Are the mechanisms for review adequate?
- Question 3: Is the programme adequately communicated to stakeholders?
- Question 4: Is the programme robust to future change?
- Question 5: Are there areas which members would like to investigate further?

[11] NDA Response to member's views and outcome of discussion

11.1 A detailed discussion was held on the above topics. Members asked questions regarding R&D required for long term monitoring and how waste strategies are developed. Head of IWM responded that SLCs produce integrated waste strategies and TBUrd documents that inform the R&D. Previous work on stores guidance, which included R&D for long term monitoring requirements, had been published and would be reviewed shortly.

11.2 Members questioned the current strategy for graphite and whether any work should be sponsored by NDA now. Head of IWM responded that there was no near-term need for NDA to sponsor any specific work to implement the current strategy.¹ The strategy

¹ NDA graphite strategy was published in January 2014: For reactor core graphite, the baseline strategy is to package and transfer directly to the Geological Disposal Facility for site in England and Wales. For other graphite wastes which are nearer term arisings wastes will be packaged and stored pending disposal. Further detail is contained in NDA position paper of Graphite strategy. <http://www.nda.gov.uk/publication/strategic-position-paper-on-the-management-of-waste-graphite/>

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continues to be reviewed. Other relevant R&D work that could inform that strategy is being carried out by industry *via* funding from Innovate UK.

Action 08/16: Circulate the "Industry Guidance – Interim Storage of Higher Activity Waste Packages – Integrated Approach" and the NDA Graphite Strategy to Members – Head of Integrated Waste Management, NDA by 30/11/14.

- 11.3 Chair asked how NDA determine when R&D is required and the insertion points identified and what the requirements may be on a medium timescale of 2030 – 2040. Head of IWM, NDA responded that NDA had developed its own IWM Strategy Development Programme where NDA sought input from key stakeholders including the Regulators. Each SLC prepares TBuRD and Integrated Waste Strategy (IWS) documents that highlight areas that require future technical underpinning including key decision points or specific issues that need to be addressed. Also, there is continuous engagement with the Industry via NWRF and its Working Groups who are required to highlight and prioritise their technical challenges. Members also asked how NDA communicates with the supply chain about the future challenges. NDA have produced a 5 year R&D plan and Co-Chair NWRF, Sellafield Ltd commented that challenge statements have been produced and are used with the supply chain to cover this issue.
- 11.4 Members asked what the value of the programme is and whether an analysis of the programme had been carried out to identify the current Technology Readiness Level (TRL) of the projects to review where the majority of R&D work is focussed. Head of IWM, NDA agreed that could be valuable. Members also discussed where there may be the comparisons with the situations in other countries, specifically France.

[12] Further Research Board questions and discussion

- 12.1 Question 1: Is the programme soundly based?

Members noted that the scope of the area is wide but the programme is focussed on appropriate key areas and that appropriate tools are in place to inform the programme. Members asked Head of IWM, NDA if there were matters not being addressed that he thought should be. Head of IWM responded that he believed all matters necessary at this time were being addressed.

- 12.2 Question 2: Are the mechanisms for review adequate?

Members commented that the review mechanisms are appropriate for the size of programme, key accountabilities are defined and appropriate checks and balances are in place (e.g. NDA Internal R&D Board). There is a diverse and strong input from NWRF and the working groups recognising that this also comes from non-NDA estate organisations membership e.g. EDF Energy and AWE.

- 12.3 Question 3: Is the programme adequately communicated to stakeholders?

Members commented that there may be opportunities to communicate the longer term challenges to the academic community in more varied ways to ensure the needs are appropriately recognised by relevant academic funding bodies. Communication via the NWRF and the Working Groups is effective and there are tools and mechanisms in place

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to communicate with the Supply Chain directly engaged by NDA *via* its Direct Research Portfolio. These are also captured in the published NDA 5 year R&D plan.

12.4 Question 4: Is the programme robust to future change?

12.5 Members commented that to ensure robustness, both the strategic overview and the bottom up detailed view are required to ensure appropriate flexibility to respond to the R&D challenges. The NWRf Waste Packaging and Storage Working Group was using this approach to prioritise R&D challenges. It was recognised that interim and pre-treatment options give robustness to future change.

12.6 Question 5: Are there areas which members would like to investigate further?

Members commented that it is recognised that there are areas of mutual interest with other waste producers including EDF and defence. It was noted that these areas are discussed as part of strategic interactions on IWM and also via membership of the NWRf and the relevant working groups. Members did not identify any areas that they would like to investigate further.

[13] Summary of IWM R&D with respect to pre-disposal treatment of HAW

13.1 Due to the relevance of this topic to related areas e.g. defence and also international experience it was agreed that production of the Position Paper would be progressed by a small group including Chief Technologist, AWE and Programme Manager, CEA.

- **Action 08/17:** Prepare Position Statement for IWM with support from NDA, AWE and CEA – Chair by 31/01/15.

[14] Observations on Meeting 8

14.1 Chair asked the CoRWM member whether he had any observations with regard to the meeting. He responded this topic is an area with a lot of stakeholders and it can be a difficult area in which to carry out R&D due to the potential scale of R&D programmes that may be required. He added that there was evidence in the meeting of strong challenge by the Board and that the approach of forming a view, compiling a Position Paper with sensible observations and recommendations was a sound approach.

[15] Review of Actions

15.1 The Actions were reviewed.

[16] Any Other Business

16.1 Head of Research, RWM drew Members attention to their recently published Science and Technology Plan.

16.2 Co-Chair NWRf, Sellafield Ltd drew Members attention to the forthcoming NWRf conference in November.

16.3 Chair facilitated a brief discussion on lessons to be learned on recent events of relevance including operations that had been affected at WIPP

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CLOSE

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APPENDIX 1 – Outstanding and New Actions

- Action 03/05:** Board members to review draft report when circulated and provide comments back to NDA within one month – Ongoing
- Action 03/08:** Chair and NDA to undertake a comparison with the TBuRD output and report back to the Board on its conclusions – Ongoing
- Action 08/01:** Share the Regulatory Interface Protocol – HM Deputy Chief Inspector, ONR by 30/11/14
- Action 08/02:** Develop induction material for new Board Members – Chair & Head of Technology, NDA by next meeting
- Action 08/03:** Consider using a small group of members to review and finalise position statements – Chair
- Action 08/04:** Compare the Research Board Terms of Reference with the NWRF Terms of Reference to ensure compatibility – Head of Technology, NDA and Co-Chair of NWRF, Sellafield Ltd by 31/12/14
- Action 08/05:** Circulate the action list – Head of Technology, NDA by 30/10/14
- Action 08/06:** Evaluate where R&D funds are being spent to identify whether this matches the challenge areas and therefore potential for R&D to have greatest impact. Circulate findings to the Board – Head of Technology, NDA and Co-Chair of NWRF, Sellafield Ltd for discussion at next meeting
- Action 08/07:** Share current work on TRLs and other metrics e.g. System Readiness Levels – Head of Technology, NDA at next meeting
- Action 08/08:** Update the Board with respect to ONR updated strategy and interfaces with this Board – HM Deputy Chief Inspector, ONR by next meeting
- Action 08/09:** Clarify final recommendations from Board position paper on RWM Research Programme. Confirm date on paper to account for snapshot in time – Chair by 31/01/15
- Action 08/10:** Circulate the spent fuel note to Board members – Co-Chair of NWRF, Sellafield Ltd by 30/11/14 (complete in meeting)
- Action 08/11:** Consider whether any relevant comments are required for the Position Paper regarding NDA's archiving strategy for samples – Chair by next meeting
- Action 08/12:** Amend the Position Statement on NDA's Spent Fuel R&D programme and circulate to members – Chair by 30/11/14
- Action 08/13:** Members to provide final approval to the amended Position Paper - All by 31/12/14
- Action 08/14:** NWRF co-chairs to consider with NWRF working groups what support they would like from NDARB and what metrics may be appropriate and report outcomes back to NDARB – Co-chairs of NWRF by next meeting

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Action 08/15: NWRF co-chairs to ensure that working groups have a prioritised list of R&D needs and opportunities that they will be focussing on and a 2 year forward plan of their activities

Action 08/16: Circulate the "Industry Guidance – Interim Storage of Higher Activity Waste Packages – Integrated Approach" and the NDA Graphite Strategy to Members – Head of Integrated Waste Management, NDA by 30/11/14.

Action 08/17: Prepare Position Statement for IWM with support from NDA, AWE and CEA – Chair by 31/01/15.