

Across The Pond

A Quarterly Update on Joint UK NDA/US DOE Activities and Initiatives

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U.S. DEPARTMENT OF
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NDA

Nuclear
Decommissioning
Authority

FOREWORD: This is the first edition of “Across The Pond” for some time. However, the absence of the newsletter is not a reflection on the level of effort and success that is being generated from the UK NDA/US DOE relationship; quite the opposite. In 2013, more effort went in to developing collaborative efforts and sharing lessons learned than ever before. We believe it is important to share details about what is happening, so we have produced this 2013 Summary newsletter. We hope you enjoy reading about the many areas of collaboration currently underway

Ana Han, Lead Foreign Affairs US DOE EM

John Mathieson, Head of International Relations, UK NDA

Plutonium Management Information Exchange Workshop held in Sellafield

The third Plutonium Management Information Exchange Workshop was held in Sellafield on October 1 & 2. Attendees included staff from UK NDA, UK National Nuclear Laboratory, Sellafield Ltd, Los Alamos National Laboratory, Savannah River National Laboratory and the University of Manchester although attendance from DOE HQ was precluded by the US Government shutdown. The meeting covered a wide range of topics related to the safe, long term storage of plutonium and included detailed discussions on the new Sellafield Products and Residues Storage (SPRS) facility which will be storing close to 10,000 packages for 100 years. A tour of the UK National Nuclear Laboratory's newly commissioned active facilities was also undertaken by the group. The venue also served as a Progress Meeting on the current joint work being conducted by the University of

Manchester on stress corrosion cracking mechanisms in storage cans and to explore additional joint programs in areas such as water radiolysis of plutonium oxide during storage.

Follow up actions are ongoing to define the scope and budget for additional joint projects and for UK experts to attend the semi-annual US DOE Materials Identification and Surveillance (MIS) meetings on plutonium management. Plans are also being formulated for the fourth meeting to be held in the USA in late 2014/early 2015 and for a series of personnel exchanges to be actioned before then.

Danny Fox, Head of Nuclear Cycle at NDA said “This is the third meeting of this group and the relationships formed, and knowledge exchanged, has proven extremely helpful over the past 3 years in

supporting the UK's approach to plutonium storage.

The relationship between the US and the UK has always been a good one but the activities under the Bilateral Agreement have taken our activities and information exchange to a higher level”.

Hitesh Nigam, Senior Environmental Engineer at the DOE's Office of Environmental Management commented “We have made great progress since our initial meeting in September 2010 and both sides are benefitting from the continuous exchange of ideas and know-how as well as through the development of joint R&D programs. I am very much looking forward to the next meeting to continue the excellent technical exchanges and policy discussions”



Participants in the Third Meeting on Plutonium Management Information Exchange Workshop held in Sellafield in the UK.

From L-R: Jason Farrell (NDA); Beth Hackney (Savannah River National Laboratory); David Woodhead (UK National Nuclear Laboratory); Kerry Dunn (Savannah River National Laboratory); Kirk Veirs (Los Alamos National Laboratory); Dirk Engleberg (University of Manchester); John Mikalonis (Savannah River National Laboratory); Howard Sims (UK National Nuclear Laboratory); Laurie Judd (NuVision Engineering); Jeff Hobbs (Sellafield Ltd); Paul Cook (Sellafield Ltd); Danny Fox (NDA); Robin Orr (UK National Nuclear Laboratory)

EM Delegation Tours UK Cleanup Program's Sellafield Site

In May a senior-level DOE EM delegation led by Associate Principal Deputy Assistant Secretary Alice Williams visited the Sellafield nuclear site to gain insight into the cleanup projects and facilities under the jurisdiction of the UK's Nuclear Decommissioning Authority (NDA).

NDA, which is responsible for the decommissioning and cleanup of the UK's civil nuclear legacy, arranged the visit. The delegation met with senior staff at NDA, Sellafield Ltd., the company tasked with cleaning up the Sellafield site, and the National Nuclear Laboratory (NNL), an organization that supports the nuclear industry through technology development, demonstration and implementation.

The delegation and staff discussed major decommissioning projects onsite, such as the:

- Pile Fuel Cladding Silo, built in the 1950s to store radioactive material used in reactors; and

- Pile Fuel Storage Pond, built in the late 1940s to store and cool spent fuel from reactors.

The delegation toured the:

- Thermal Oxide Reprocessing Plant, used to reprocess spent nuclear fuel from the UK and elsewhere, including Japan and Germany
- Waste Vitrification Plant, which converts radioactive waste into safe, stable glass blocks for long-term storage; specifically, the group toured both the active plant and a fully operational, non-radioactive mock-up of the plant which has been used for operator training, operations optimization and troubleshooting for more than a decade; (EM is building a similar facility, the Waste Treatment Plant (WTP), at the Hanford site in Washington state)

- NNL Central Laboratory, which is currently undergoing active commissioning; and

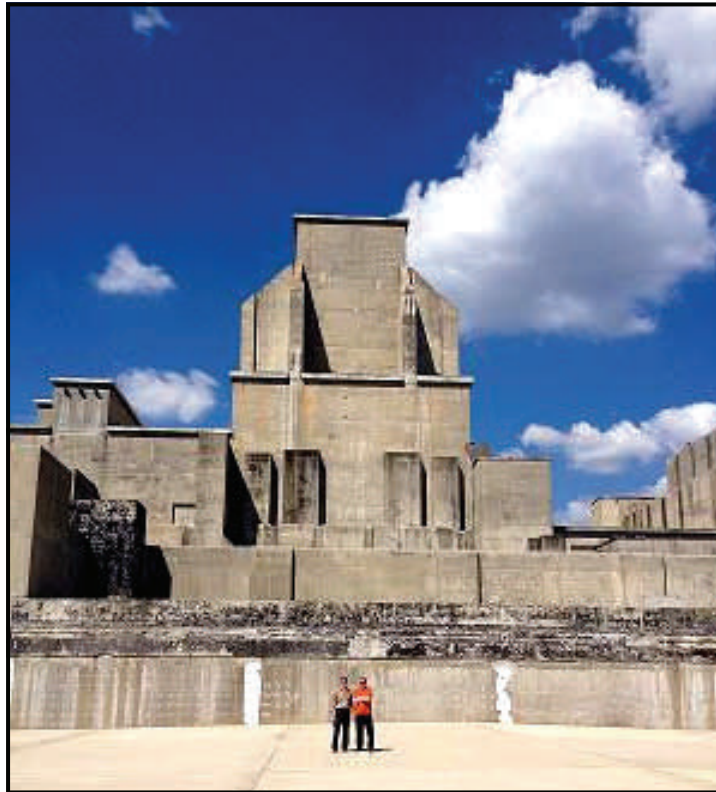
- NNL Workington facility, which houses multiple mock-ups and large-scale demonstration test rigs.

"Sellafield appears to be the Hanford and Savannah River sites compacted into two or three square miles," Williams said. "I have been incredibly impressed with the level of decommissioning activity going on at the site given such a small footprint. The UK knowledge and experience of long-term, successful operation of plants based on the 'black cell' approach is clearly evident and could be of great use to EM as we address the technical challenges at WTP."



Front row, left to right, NuVision Engineering Vice President Laurie Judd, EM Lead International Affairs Specialist Ana Han, EM Associate Principal Deputy Assistant Secretary Alice Williams and United Kingdom Nuclear Decommissioning Authority (NDA) Head of International Relations John Mathieson; back row, left to right, NDA Sellafield Site Deputy Head Graham Jonsson and EM Deputy Assistant Secretary for Tank Waste and Nuclear Material Management Ken Picha.

Savannah River and NDA Sellafield Host Exchange Visits for “Benchmarking” Discussions



Graham Jonsson and Lee Peck in front of the entombed P&R Reactor

At the Waste Management Conference in Phoenix in 2013 it was agreed that NDA and USDOE at Savannah River would benefit from a closer working relationship and that specifically it would allow personnel from both entities to “benchmark” their respective approaches.

To progress this activity, Graham Jonsson (NDA, Deputy Head of Sellafield site) and Lee Peck (Major Programmes and Projects) from the NDA Sellafield team spent a week at the Savannah River site in early October. The purpose of the visit was to understand where similarities exist in site challenges and operations and to identify lessons that could be learned and shared, as well as identify areas for future collaboration across the SRS and Sellafield site. This visit followed one made earlier in the year by a team led by Zack Smith from Savannah River to NDA Sellafield to benchmark the NDA approach to site management.

Following extensive and extremely informative sessions on a wide variety of topics, the key messages taken away by the NDA team included:

1. There is a different approach to how the site is set up, how the site contract is managed and how USDOE manages the overall site when compared with the NDA and the Sellafield site. In particular:
 - a. the DOE has multiple contracts rather than a single M&O contract, which it had prior to 2002 and similar to that which NDA has today.
 - b. The DOE carries out a much wider role on the site when compared with the NDA. For example, the DOE carries out the safety compliance role, which is undertaken by the contractor and the Regulator at Sellafield.
2. The fundamental difference in how the site operates and how projects and operations are separated.
3. Major project delivery at Savannah River has encountered very similar issues to those experienced by Sellafield Ltd in the UK.
4. Significant progress in the clean up area has been achieved through increased funding and the drive to achieve aggressive targets.
5. The approach taken with regulators to develop the safety case argument for entombment and the pragmatic applications of the “no danger” requirement has enabled the accelerated entombment of 2 reactors on the Savannah River Site.
6. Opportunities exist to explore information exchange on technical topics such as fuel drying, HEU processing and plutonium conditioning for disposal as well as transuranic waste disposition.

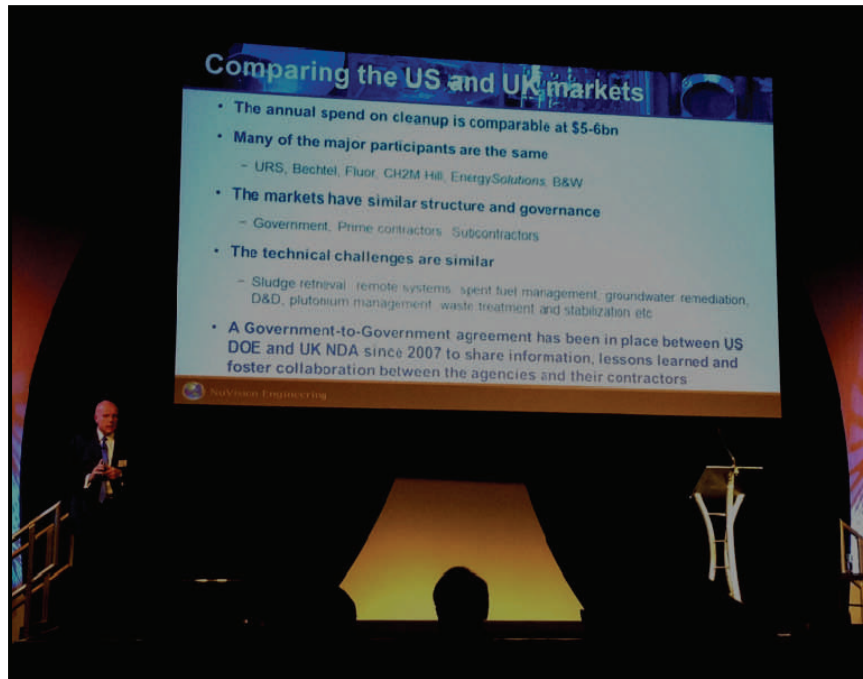
The intention going forward is that further collaboration and benchmarking will be undertaken between the organizations with a visit planned by Dr. David Moody in the Spring of 2014 where he will also be accompanied by Terry Michalske, Head of SRNL.

DOE / NDA Bilateral Agreement Highlighted at NDA Supply Chain Event

In November Laurie Judd from NuVision Engineering accepted an invitation from the UK Department of Trade and Investment (UKTI) to present at the NDA Annual Supply Chain Event on how the UK Supply Chain could gain access to the US decommissioning market. Laurie, who has more than 20 years experience of transferring technologies and know-how from

the UK into the US cleanup program discussed a number of approaches which companies can adopt including partnering with large and small US companies as well as using the DOE/ NDA Bilateral Agreement as a vehicle to ensure that the US Dept of Energy is made aware of cleanup successes in the UK and their potential relevance to similar cleanup issues in the US.

In addition to the presentation, Laurie also had the opportunity to meet with John Clarke (CEO, NDA) and Baroness Verma (Parliamentary Under Secretary of State for the Department of Energy & Climate Change) and other International delegates from countries including France, Spain, Japan, Romania and Bulgaria.



Laurie Judd addresses an International audience at the NDA Supply Chain Event in Manchester UK

Joint U.S. / UK Initiative Underway to Identify Remote System Needs, Technologies and Developments

Many D&D issues in the UK and the US may require the implementation of remote handling expertise and equipment. For example, at the DOE's Hanford site, high visibility projects such as the remediation of B Cell at B324 and the recovery of wastes at the caissons will require the development and application of advanced remote systems. Similar systems are also needed to support the NDA cleanup program on projects such as the decommissioning of the Pile Fuel Cladding Silo at Sellafield and the remediation of the Dounreay Shaft and Silo.

To address this need, DOE's Office of D&D and Facility Engineering is funding NuVision Engineering and its partner Cogentus Ltd to conduct a desk-based assessment of the current state-of-the-art of robotics and remote technologies in both nuclear and non-nuclear industries. The project is also conducting a review of the current and proposed technology projects being funded by DOE and the TBUrd (Technical Baseline and Underpinning R&D) activities to be undertaken by the UK NDA and their Site Licensed Companies to identify and develop emerging technologies.

Finally the project is mapping all of this information onto known and predicted D&D needs in both countries to identify where current systems could be applied in the short term and where Federally funded development programs should be targeted so as to avoid 'reinventing the wheel'. In this way, the project will help DOE and NDA to optimize its R&D and Technology Development spend, identify technologies and applications which can be implemented immediately and thereby lead to more cost effective and accelerated cleanup of legacy facilities.

Senior DOE Managers present at 3rd UK Decommissioning and Waste Management Conference

Alice Williams (Associate Principal Deputy Assistant Secretary for Environmental Management) and Matt Moury (Deputy Assistant Secretary, Safety, Security and Quality Programs for Environmental Management) presented keynote addresses at the Nuclear Institute's 3rd UK Decommissioning and Waste Management Conference held at the Rheged Conference Center in Penrith, UK in July.

Alice presented a detailed overview of the DOE's EM program which

complemented the preceding presentation on the UK cleanup program which was given by NDA COO, Mark Lesinski. Matt's presentation focused on safety and quality lessons learned from the US decommissioning program. Both presentations were warmly received by the conference delegates and are available online at <http://www.ukdwm2013.com/index.php>.

Following the conference, Matt made his first visit to the Sellafield site where he had a series of meetings with his counterparts at NDA and Sellafield Ltd

to discuss safety and security issues at nuclear installations. Matt said "I was truly impressed by the amount of activity going on at the Sellafield site; not just decommissioning but construction and operations all on a small footprint of just a few square miles. The safety and quality mentality on the site appeared to be excellent and the site security personnel were first class".



Alice Williams



Matt Moury

NDA Provides Critical Insight into Cementation of Wastes at the Separations Process Research Unit (SPRU)

In April, Simon Wisbey, head of Packaging Assessment at the Radioactive Waste Management Directorate in NDA, provided crucial insight to support the proposed cementation of 10,000 gallons of radioactive liquid waste at the SPRU facility in upstate New York. SPRU operated from 1950 to 1953 as a pilot plant to research liquid waste processes to extract Uranium and Plutonium from irradiated Uranium supporting operations at DOE's Savannah River and Hanford sites. The DOE contractors on the project, URS Corp and Energy Solutions, developed a cement formulation that they were confident would be suitable to safely and effectively encapsulate the wastes. However,

the cognizant DOE Federal Project Director, Steven Feinberg felt that it would be prudent to also seek a third party opinion given the large size of the waste containers involved.

The proposed approach was discussed in detail and Mr. Wisbey was able to share specific insight from his 30+ years of experience of scale up and implementation of cementation for similar wastes in large waste packages. He identified some "do's and don'ts" and some areas where extra attention was necessary in order to ensure that the process could be conducted safely and that the final waste forms were acceptable. The positive experience and successful outcome from

similar UK operations were sufficient to satisfy the DOE that the approach proposed was appropriate and by the end of December twenty-one waste containers had been cemented for shipment. Mr. Feinberg commented "The Bilateral Agreement between DOE and NDA gave us ready access to an experience base that otherwise would have been difficult to access. The speed with which we were able to discuss our concerns and issues was very beneficial in helping us to keep to our planned schedule for the cementation of this challenging waste."

UK Magnox Subject Matter Expert visits DOE HQ to discuss Asbestos Abatement

Early in 2013, the NDA completed more than 10 years' worth of work to remove in excess of 2100 tons of asbestos during the decommissioning of the Magnox reactor, Hinkley Point A, in the south west of the UK. The asbestos represented the largest non-radiological hazard on the site and has been a major priority since the two reactors were shut down in 2000. Working closely with specialist contractors, Magnox pioneered a number of innovative approaches to dealing with the waste including compaction and careful monitoring to enable disposal at sites other than the national LLW disposal facility, near to Drigg in Cumbria, which has limited capacity.

The US Dept of Energy is also charged with decommissioning buildings and facilities containing asbestos and, in

particular, corrugated transite panels which were used as siding on multiple buildings on DOE sites in the 1950's, 60s and 70s.

To ensure that the DOE is making best use of the knowledge and experience generated from the extensive asbestos remediation campaigns currently under way and completed on the Magnox reactors, Ken McConnachie, who has led many of the efforts in the UK, visited DOE Headquarters in Washington DC in June to discuss lessons learned and also to learn more about some of the specific issues being addressed by DOE. In particular, the benefits and drawbacks of a manual versus automated approach to transite panel removal were discussed along with the radical approach of direct demolition followed by collection and

segregation of asbestos debris. Ken's perspective was that the rules and regulations governing the remediation of transite panels in the US and the UK were very similar and that there were very few improvements that could be made to the current DOE approach.

Andy Szilagyi, Office Director, D&D and Facility Engineering at DOE HQ said "It is good to know that our current approaches are consistent with International best practice. We will maintain an active dialogue with the UK in parallel with our continued operations to ensure that we are in a position to benefit from any significant developments in this area".

U.S. UK and Canada Join Forces to Improve the "Transition to Operations" of New Nuclear Plant

A number of discussions have been held recently involving senior representatives from US DOE, UK NDA, Atomic Energy Canada Limited (AECL) and Aldermaston Weapons Establishment (AWE) in the UK. The topic of the discussions has been lessons learned and current protocols and approaches to making the transition from a plant being designed and built to an operating plant especially when the design/build contractor is not the same as the operating contractor. All of the organizations represented are in the process of building new nuclear plant but have not been through the process of commissioning, handover and new operations for many years or, if they have, have experienced transitional issues where the plant does not operate as anticipated. The issues are consistent throughout each

of the organizations and cover a wide variety of topics including records management, the integration of operations and maintenance knowledge in the design team, quality and quality control of the plant construction, workforce development during design/build, development of operations and maintenance strategies and contracting approaches and incentives.

At the most recent discussion in late December, it was agreed to hold a 2-3 day technical exchange meeting in Washington DC in late April/early May 2014 to enable a detailed dialogue between the parties. The focus of the meeting will be to discuss each organization's current procedures and protocols for specific activities and, from

that, to start to develop a "collective best practice" which assimilates all of the lessons learned across the US, UK and Canadian Federal nuclear industry.

NDA lead for this initiative, Phil Edge said "There is always a great deal of attention on the active commissioning and startup of new nuclear plants. In order to deal with the hazards on our sites in a safe, timely and cost-effective manner, it is vital that these plants make a smooth transition into operations when the construction phase is complete. This dialogue will give us all an excellent opportunity to share our collective experiences and will help to ensure that we are applying international best practice to this common challenge".

Savannah River and Sellafield Join Forces to Tackle Alpha Plant Decommissioning



B-235F at the Savannah River Site

Teams from Savannah River and Sellafield have been working together to share lessons learned and best practice for the decommissioning of alpha-contaminated facilities. Of particular interest at Savannah River is Building 235-F, which was constructed in the 1950's and has been used for multiple plutonium technology and processing operations including the manufacture of fuel forms in the PuFF facility (Plutonium Fuel Forms) for radioisotope thermoelectric generators used in National Aeronautics and Space Administration (NASA) space vehicles development. As part of the manufacturing process, the plutonium oxide feed material was milled to a fine powder with an average diameter of approximately one micron (about the size of a typical bacterium) which is highly mobile.

The nature and extent of the contamination in the facility make it one of DOE's most hazardous radiological facilities.

In the early 1990s, the facility was shut down and de-inventoried of free product. However, non-destructive assay (NDA) of the hot cells and glove boxes revealed several hundred grams of Pu-238 in the process equipment. Since the facility has no current or future mission, DOE is planning to decontaminate all of the nine cells and their associated glove boxes, which should remove >90% of the existing Pu-238 in the facility. Vessels, furnaces and ancillary equipment that cannot be readily decontaminated will be grouted. These activities will be major steps to reducing the risk associated with the building.

In the UK, Sellafield Ltd has just recently completed Phase 3B of the decommissioning of a fuel fabrication plant which was contaminated with Plutonium oxides including some with similar properties to those in Building 235-F. Given the similarities in the two projects, a number of conference calls were arranged to share lessons learned during the decommissioning of this facility. The timing was particularly good as the Savannah River team was in the process of completing their deactivation plan and so was able to incorporate lessons learned from the Sellafield team into their planning process. Further discussions are planned in 2014 as the work on 235-F progresses and the Sellafield team can bring additional expertise and experience to bear on the project.

EM Continues Progress in U.S.-U.K. Collaboration

In March 2013, officials from DOE EM and the UK NDA held the joint 10th Standing Committee Meeting on the fringe of the Waste Management conference in Phoenix, AZ to discuss progress on the Statement of Intent (SOI) for the information exchange concerning radioactive waste management.

In opening remarks, Carlsbad Field Office Manager Joe Franco highlighted the Waste Isolation Pilot Plant's excellent operational history. Meeting participants discussed major issues of the EM and U.K. cleanup programs and

how both programs are drawing from each other's experience to achieve faster, safer and cost-effective cleanup. The multiple representatives acknowledged the benefit of the transatlantic relationship and identified areas for future collaboration. NDA is tasked with the decommissioning and cleanup of the U.K.'s civil nuclear legacy.

The SOI has resulted in information sharing and joint efforts in a number of areas including thermal treatment technologies, plutonium management, aging facilities management, non-

standard fuels disposition, glass chemistry, sodium passivation and decontamination technologies.

"Through the SOI, we are expanding the relationship between the U.S. and the U.K. to find ways to advance our respective cleanup programs," EM Foreign Affairs Specialist Rosa Elmetti said.

The next Standing Committee Meeting will again be held in the margins of the WM conference in March 2014.



Front row, left to right: John Mathieson, Head of International Relations, U.K. Nuclear Decommissioning Authority (NDA), Joe Franco, Manager, Carlsbad Field Office (CBFO), and Graham Jonsson, Deputy Head, NDA, Sellafield Site; second row, left to right, Andrew Szilagyi, Director, EM Office of Deactivation & Decommissioning and Facility Engineering, Laurie Judd, Vice President for Government Programs, NuVision Engineering, Nancy Buschman, Engineer, EM Office of Nuclear Material Disposition, John Lawes, Contract Manager, Dounreay, Dr. Abraham Van Luik, Manager, International Programs, CBFO, Rosa Elmetti, Foreign Affairs Specialist, EM International Program, and Steve Schneider, Director, EM Office of Tank Waste Management

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