US DOE / UK NDA Bilateral Agreement

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Waste Management Symposium
Wednesday February 27th 2013

Bilateral Agreement/Statement of Intent

- **What is it ?**
  - **An agreement between UK NDA and US DOE to share information and lessons learned in the fields of nuclear technology, legacy waste management, spent fuel management, D&D, contracting approaches, geological disposal …..**
- **Why does it exist?**
  - **Scale and scope of respective programs are similar**
  - **Technical issues and challenges are similar**
  - **Reducing budgets are driving the need for collaboration, cooperation and a renewed focus on 'lessons learned' and information sharing**

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Focal Points to Date

- **Because of the similarities in the programs, there are numerous possibilities for collaboration**
- **Focus to date has been on a relatively small number which offer the greatest potential to both parties**
  - **Spent fuel management**
    - **Aging facilities management**
    - **Non standard fuels disposition**
    - **Fuel drying technologies and dry storage**
  - **Plutonium management**
  - **D&D approaches and technologies**
    - **Decontamination technologies e.g. Decon Gel**
    - **α-plant decommissioning**
    - **In situ decommissioning**
    - **Sodium Passivation**

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Focal Points to Date

- **Waste Management and Stabilization**
  - **Alternative Thermal Treatment Technologies**
    - GeoMelt, HIP
  - **PJM/Black cell operations**
  - **Glass chemistry/formulation**
  - **Tank corrosion and structural integrity**
  - **Ion exchange resin disposal**
  - **Sludge retrieval**
- **Other**
  - **Supply chain management**
  - **Contracting/Partnering approaches**
  - **Site security approaches and technologies**

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Typical Process

- Identify and agree topic area
- Conference call with interested parties to share information, identify areas of overlap and complementarity
- Form smaller, focused teams on specific areas of interest
- Exchange information/reports etc via email
- Hold regular conference calls until it makes sense to engage person-to-person
- Arrange mutual visits and/or workshops
- Facilitate relationships between parties to develop joint Task Plan
- Support the process until it becomes self-sustaining

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Measuring Success

- Tangible benefits
  - Joint R&D programs
  - R&D leveraging
  - Technical input which obviates the need for R&D
- Intangible benefits
  - Development of technical communities
  - Formal and informal information exchange which improve operations, avoid expenditure etc

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Example: Spent Fuel Management

- "Spent Fuel Management" topic area identified in September 2009
- Calls held every 6-8 weeks
- Workshop arranged in Washington DC, Sept 2010
  - DOE HQ, DOE SR, DOE ID, NDA, UK NNL, Regulators
- Identified four key areas
  - Aging facilities management
  - Non standard fuel disposition
  - Fuel drying and dry storage
  - Plutonium management

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Example: Plutonium Management

- Initial Plutonium Management call held December 2010
- Multiple areas of overlap and interest identified
- Classified Technical Exchange Meeting held April 2011
  - DOE, NDA, SRNL, PNNL, NNL, Sellafield Ltd, ONR
- Top priority topics agreed
- Leveraged programs developed
  - Area 1
    - DOE has funded Phase 1 work and shared the results with NDA
    - NDA is about to fund complementary scope of work which has been developed with DOE input and will share results with DOE

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Example: Plutonium Management

- Area 2
  - DOE has been taking an experimental approach whereas NDA has been taking a modeling approach
  - DOE has shared experimental data to help NDA refine its model and NDA has made model available to DOE
- Both parties get double the benefit from the same level of individual expenditure
- "Routine" calls continue on a ~bimonthly basis to monitor progress and to develop additional leveraged programs

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Example: Aging Facilities Management

- Initial AFM call held in January 2011
- NDA had just commissioned a report to identify possible issues and remedies in long term asset management
- Multiple calls were held during the report development to share data generated to date and to solicit DOE input
- Generated multiple areas of collaboration
  - Sampling data from decommissioned basins in the US and its relevance to longevity predictions in the UK
  - In situ inspection of fuel bundles
  - Pond/basin construction and integrity management
  - Integrity of fuel and fuel cans during and after long term storage
  - Retrieval, inspection and repackaging approaches and experience
  - Non intrusive monitoring technologies and approaches

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Observations

- It is a time-consuming, labor intensive process
  - 2-3 years to make any significant progress
  - Takes time for each side to really understand the similarities and differences between their respective programs
- Topic areas start very general, then become a little more specific and then very specific
  - Each level takes a similar amount of time and effort to develop and to build the relationships as they involve 'new' participants

Observations

- Greatest success is achieved when there is a clear “driving force” on both sides
- Need a dedicated, committed protagonist on both sides
- Generally, participation is an “in addition to” assignment
- Commercial sensitivities and lack of available funding can impede progress

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Summary of Results

- Excellent progress has been made
- Joint R&D activities are underway
- Leveraged funded programs have been developed and have demonstrated tangible, financial benefits to both parties
- Numerous information exchange activities have been completed or are underway in multiple topic areas
- Strong "Communities of Practice" forming across the board at all levels
  - DOE, NDA
  - Prime contractors – Sellafield Ltd, CWI, Babcock, Dounreay Site Restoration Ltd
  - National Labs – NNL, INL, SRNL, PNNL
  - Universities – Sheffield, Manchester

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Summary of Results

- **Numerous face-to-face information exchange visits have been completed between key technical experts**
  - **Idaho: HIP**
  - **West Valley/Hanford: Remediation/D&D/Change management**
  - **WIPP: Stakeholder engagement**
  - **Sellafield: PJM/Black cell operations**
  - **Sellafield: Contracting**
  - **Dounreay: Spent fuel management**
  - **Idaho and SRS: MOX, new generation reactor**

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Next Steps

- Continue to develop current topic areas to further leverage expertise, experience and funding
- Identify and add more topic areas as the need arises
- Begin the process of comparing R&D plans to identify common issues and leveraging opportunities

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