

WM2009 Conference Panel Report

Panel Session 03 - Waste Management Challenges and the Nuclear Renaissance – A Worldwide Perspective

Panel Reporter - John Mathieson, NDA (UK)

Panellists included:

- Larry Camper, Director, Division of WM & EP, NRC (USA);
- Marie-Claude Dupuis, CEO, ANDRA (France);
- Prof. Gordon Sibiyi, Consultant (South Africa), NDA;
- Rosie Mathisen, North of England LLC/Cumbria (UK);
- Prof. Graham Fairhall, Chief Technology Officer, National Nuclear Laboratory (UK).

Some 90 people were present to hear this session. Following introductions by the Co-chair, Larry Camper opened the proceedings. He referred to the keen interest in new build in the US and the combined construction and operating licensing process. Interest in new build also meant renewed interest in U recovery and enrichment which are also licensed by NRC. He noted that larger quantities of DU were being produced which threw up challenges in its Class A LLW classification as it had special properties that distinguish it from this category. Reactor decommissioning programmes would increase LLW disposal rates by a significant factor by about 2045 which would put strains on disposal capacity, particularly for Class B/C. For high level waste and Yucca Mountain, whilst the submission of the license application by DOE was a major milestone, the recent decision on its funding was an issue. With increased interest in spent fuel recycling, NRC was reviewing its capabilities in this area.

Rosie Mathisen described the new nuclear build opportunities for West Cumbria in the UK where three sites had been proposed for new stations; the reactor designs would likely be Westinghouse's AP1000 or Areva's EPR. This was set in the context of the decommissioning of Sellafield and the proposed development of other low carbon and renewable energy contributions taking place under Britain's "Energy Coast Master Plan" and which, amongst other things, takes advantage of the skills and reputation for innovation at Sellafield. The Master Plan aims to build an economy based on energy, environment and technology business clusters within the region. The development and maintenance of skills was important and she highlighted the creation of the University of Cumbria.

Marie-Claude Dupuis gave an overview of France's existing nuclear programme of 58 operational reactors, with one under construction and a further one proposed. Having such a large nuclear programme gave rise to a many waste streams and she described how very low-level waste was being disposed of at a new facility at Morvilliers, and short-lived low and intermediate level wastes at Centre de l'Aube. An underground research lab had been constricted and investigations being undertaken; it was proposed to have the facility available by 2025. France also had an issue with graphite and radium-bearing waste for which another facility was being proposed and a site being sought.

Graham Fairhall summarised the history of nuclear power in the UK and noted the political support in being given to new nuclear build. He further summarised the progress with the siting of a geological disposal facility with two locations in West Cumbria expressing an interest in hosting it. Looking at the international picture he commented that future prospects for nuclear power depended on establishing both public and commercial acceptance, notably in relation to safety, economics, proliferation and security,

and radioactive waste management. Of the 39 or so countries with significant quantities of radioactive waste, 25 had adopted geological disposal as a long-term policy and none had adopted a policy of long-term storage as a final option. Regarding spent fuel, countries had a choice as to whether to recycle or dispose directly. Sustainability of nuclear energy was important but there was concern over the longevity of radioactive waste. This could be addressed through the possibility of partitioning and burning Pu and the minor actinides.

Gordon Sibiya gave some facts and figures for South Africa's nuclear status which currently represents 6% of its electricity production. In order to fill an energy gap a new nuclear station, Nuclear 1, amongst a number of other new power stations, was planned as part of the implementation of the country's 2007 Nuclear Energy Policy and Strategy. However, for economic reasons the Nuclear 1 had been postponed. South Africa was also looking ahead to GEN III+ and Gen IV reactors. He described South Africa's radioactive waste management policy which promotes a hierarchical approach for spent fuel and HLW which allows for both reprocessing and direct disposal. He further suggested that the use of regional disposal facilities would provide additional options for spent fuel and high level waste management.

Questions from the audience included:

Q. Was the European Commission's approach to trying to harmonise nuclear safety legislation across the EU helpful in implementing new build programmes.

A. It was helpful that if one country licensed a new reactor then another one could more easily do so. However, it was suggested that the individual national regulators would prefer to maintain a degree of independence.

Q: Clarification of South Africa's development and implementation of the Pebble Bed Modular Reactor (PBMR).

A: Development of the PBMR continues with suggested applications, due to its modular nature, being for desalination projects as well as power production.

Comment: In developing new build designs, there should be dialogue between the designers and the decommissioners with the aim of factoring decommissioning into the design to allow for easier decommissioning.