

PANEL SESSION 74 - Nuclear Renaissance – New Nuclear Plants Hot Topics

Co-Chairs: Jay Maisler, *Enercon*;
Jas Devgun, *Sargent & Lundy*

Reporter: Jas Devgun, *Sargent & Lundy*

Panelists Included:

- Mark Marano, *Senior VP, AREVA*
- Gerard Laurent, *Électricité de France*
- Kim Auclair, *KD Auclair & Associates*
- Jay Maisler, *Enercon*
- Jas Devgun, *Sargent & Lundy*

About 50 people were present to hear this session on Nuclear Renaissance – New Nuclear Plants Hot Topics. The panelists were introduced by Jay Maisler. The panel covered a broad range of nuclear renaissance topics including progress towards licensing of new generation of nuclear power plants, construction issues, radioactive waste and systems design, lessons from past D&D, decommissioning factors for design, and the security and safeguards issues.

Jay Maisler presented an overview of the nuclear renaissance in the United States where 17 companies and consortia are considering 30 units. Twelve COLAs for 20 units have been submitted. Designs under consideration are ABWR, AP1000, ESBWR, and USAPWR. Jay also touched on the Small Modular Reactors (SMRs) including NuScale Integral PWR, Pebble Bed Modular Reactor, Toshiba's SFR, Hyperion, B&W mPower Integral PWR.

Mark Marano's presentation focused on challenges and solutions for US new build. Mark summarized AREVA's global overview and leadership in nuclear area. He presented a realistic view of the nuclear renaissance, especially on the issues associated with the loan guarantees. He also mentioned that nuclear grade manufacturing must be expanded to meet the nuclear renaissance. Every project is unique with respect to commercial and risk attributes and must be tailored to meet the prior cost, financing, delivery, strategic and operational concerns. Key to success in new build will depend on the commitment, experience and expertise, establishing key partnerships, and developing the supply chain and marketing capabilities.

Gerard Laurent provided remarks on the EDF and the new build EPR units at Flamanville, France and at Olkiluoto, Finland.

Jas Devgun presented a broad perspective of the decommissioning considerations in new plant design. As a preamble to his talk he mentioned that the nuclear renaissance is in full swing in rest of the world with somewhat limited progress in the United States. Of the 66 new reactors under construction (at the end of 2010), China has 27, Russia 11, India 6, Korea 5, and then other countries with 2 or 1 units and U.S, also at one unit. His talk listed several features that are relevant to decommissioning and that should be part of the design process for the new reactors. Prominent among these factors are the reduction in system components and reduction in construction materials, as well as the modular designs of systems and structures. He presented graphic examples of how AP1000, ESBWR and EPR designs have significant reductions in components such as cables, valves, piping, pumps, and tanks. For illustration, AP1000 has 87%

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less cable, 50% less piping, 50% fewer valves and 35% fewer pumps as compared to a current PWR. The construction materials, concrete and rebar, are also much less in the new designs. New reactor designs use modular designs for systems and structures which can be fabricated at off site locations and then assembled in place at the construction site.

Kim Auclair said there was some limitation what he could discuss in terms of security and safeguards issues. However, using Jas Devgun's slide on Design Features Relevant to Decommissioning, he made points that some of the same factors there are relevant to security and safeguards: system design, reduction in components, structural design, modularization and use of advanced technologies. International non-proliferation and international codes and standards are relevant.

Discussion:

Mark Marano's remarks generated a number of questions related to why the US part of the nuclear renaissance has not taken off as in other countries, what the reasons are, and what could be done at the federal level.

Data presented by Jas Devgun on component reduction and reduction in construction materials also generated significant interest in the audience.

The trend in US is focused on license renewal (where almost all the operating reactors have filed for license extension (or are planning to do so). Other focus is on re-starting construction projects where build was nearly complete when these projects were put on hold in late 1980's, projects such as the units at Watts Bar and at Belafonte.

The new build is slowed awaiting federal loan guarantees. The loan guarantees provided by the federal government in 2010 were limited to planned two units at the Vogtle site of Southern Co. in Georgia. This will be the first new reactor construction in nearly 30 years. Others awaiting loan guarantees include project at Calvert Cliffs site, project at Summer Nuclear Station site in South Carolina, and the South Texas Project. Cost economics and government and public support are key to the success of nuclear renaissance in the US.

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