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NAC International Abstract

NAC's MAGNASTOR[®] System:
The Next Generation of Advanced Spent Fuel Storage for the U.S.

George C. Carver
Charles W. Pennington

At the ISSF2006 meeting in November 2006, NAC presented, for the first time outside the U.S., the next generation of dry, canister-based concrete spent fuel storage technology in the U.S., the NAC MAGNASTOR System. At that time, the MAGNASTOR System was under storage licensing review by the U.S. NRC. During the ISSF2006 meeting, extensive discussions were conducted on NAC's U.S. dry storage experience, the MAGNASTOR System licensing status, system capacity enhancements, system seismic response, the system's innovations, and further considerations unique to countries other than the U.S.

Today, the MAGNASTOR System continues to fulfill the expectations expressed by NAC at the ISSF2006 meeting. The NRC approved the MAGNASTOR System design in 2008, the MAGNASTOR System Certificate of Compliance (COC) for storage was issued by the NRC in February 2009, and the MAGNASTOR System now enjoys the anticipated acceptance by U.S. utilities. Currently, there are 109 MAGNASTOR systems on order, and many more systems are expected to be ordered as the uncertainty about spent fuel repository development and other spent fuel management options in the U.S. expands.

This presentation will briefly review the history of the MAGNASTOR System development and how it was a planned, natural evolution from NAC's historical dry storage experience. The participation by nuclear utilities and users in the design review process to assure the full capture of lessons-learned was a key element of NAC's unique approach to development, as were the numerous mockup and prototype fabrication tasks that NAC built into the development effort to assure customer satisfaction and reliable fabrication costs. Also included in this discussion will be updates on customer selection of the MAGNASTOR System and fabrication and construction schedules and deliveries.

Further, the presentation will highlight several advanced features of the system design, including:

- The system design bases for key content and site considerations
- Unique basket and concrete cask designs that very effectively extend NAC's historical focus on mechanical final assembly
- Design efficiencies that give the MAGNASTOR System the most compact, lightest weight canister design of all high-capacity systems in the U.S.
- System loading approaches that minimize occupational doses of operational loading staff
- Concrete cask design flexibility features that assure low off-site dose profiles, while also providing very substantial capacity to accommodate beyond-design-basis events.

Finally, how the MAGNASTOR System may apply for international or global use will be briefly discussed and summarized with respect to important design considerations that may be attractive to other countries.