

Implications for Managing MOX Used Nuclear Fuel at Operating Reactors

Adam H. Levin
Exelon Generation, LLC

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Dry Cask Storage at Exelon

- ✓ Five operating Independent Spent Fuel Storage Installations (ISFSI), three sites under construction (at 10 sites altogether)
- ✓ 22 (Dresden), 2 (Limerick), 16 (Oyster Creek), 41 (Peach Bottom), 19 (Quad) – total 100 casks containing 1222.4 MTU
- ✓ LaSalle and Byron operational in 2010, Braidwood operational in 2011
- ✓ Several Mixed Oxide (MOX - Pu/U) assemblies in dry storage at Dresden 1

Use of MOX Fuel at Exelon

- ✓ Use of MOX fuel impacts reactor operations in several technical areas:
 - Amendment of operating licenses to address fuel performance, safety margins, plant design bases
 - Additional reactivity control required for MOX fuel – reduced control rod worth and shutdown margins
 - Plant physical changes to address security, radiation protection and shielding
 - Dry storage of MOX used fuel – heat load and site boundary dose considerations

Use of MOX Fuel at Exelon (cont.)

- ✓ Use of MOX fuel impacts reactor operations in several technical areas (cont.):
 - Refueling critical path operations are driven by ability to offload fuel early after reactor is shut down for refueling outage
 - Upgrades required for reactor decay heat and spent fuel pool cooling systems to accommodate increased decay heat load from use of MOX assemblies, and/or
 - Additional heat load may delay core offload several days in order to handle MOX fuel

Use of MOX Fuel at Exelon (cont.)

- ✓ Recycle/reprocessing nuclear economy results in used fuel remaining at reactor sites for a long time
- ✓ Co-locating used nuclear fuel (MOX or U) at operating reactor sites (from other sites, operating or retired) is not appropriate as part of a long-term management strategy
 - Reactor sites are near water and population centers for operations and efficient delivery of electricity
 - Smart eco-management practices move hazardous wastes away from water and population zones
- ✓ Centralized storage makes better sense in “once-through” and recycle/reprocessing nuclear economies

Socio-Political Impacts of MOX Fuel Use

- ✓ Recycling/reprocessing studies have been quiet on the impact to local stakeholders
- ✓ Exelon's cost of generating electricity would rise based upon current economic analyses of advanced fuel cycles
- ✓ Existing local stakeholders (plant neighbors) have not yet been given the chance to provide feedback on impact of proposed methodologies
- ✓ Exelon has serious reservations about proceeding with new plant construction unless the used fuel management issue has been resolved – including a geologic repository for direct disposal of remaining used fuel, if any, and secondary (high-level) waste streams