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***Recycling in the U.S.:
Taking What We Have Learned and Defining Next Steps***

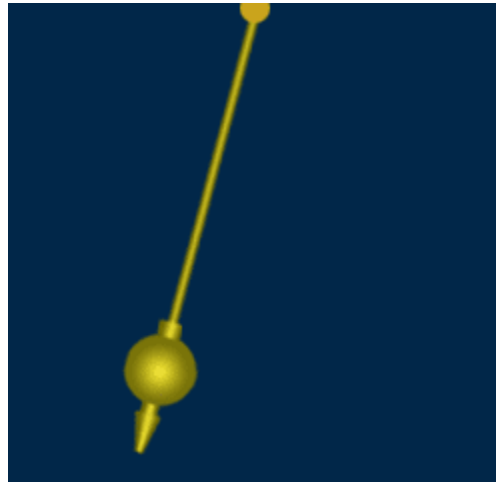
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Waste Management 2009
March 3, 2009
Phoenix, AZ

- ▶ **We are witnessing the revival of nuclear power worldwide**
- ▶ **We are stuck in U.S.**
 - ◆ **“It is unlikely that we can meet our aggressive climate goals if we eliminate nuclear power from the table. However, there is no future for expanded nuclear without first addressing four key issues: **public right-to-know, security of nuclear fuel and waste, waste storage, and proliferation.**” Sen Obama 2008**

Sustaining the Nuclear Renaissance

- ▶ **Major Questions for a U.S. Used Fuel Strategy**
 - ◆ **Does the “throw away” fuel cycle strategy provide a strong enough foundation for the rebirth?**
 - ◆ **What are the other options?**
 - ◆ **Can we ever find a long-term solution that will be politically viable (bi-partisan)?**
 - ◆ **When will we reach consensus on a long-term energy policy in the United States?**



GNEP Launches 2006:

Perception is:

- ◆ **Expensive R&D**
- ◆ **No clear road map**
- ◆ **No bi-partisan support**

GNEP Re-directed 2007:

Perception is:

- ◆ **Accelerated commercial deployment**
- ◆ **Lost sight of R&D Component**
- ◆ **No bi-partisan support**

Closing the Fuel Cycle?



What did we learn?

▶ Technology

- ◆ Mature technology that meets US nonpro requirements – no separated pure Pu
- ◆ Fast reactor requires R&D – international cooperation (?)
- ◆ In order to move from evolutionary technology to revolutionary, the labs and industry must work together from the beginning

▶ Regulatory

- ◆ Rulemaking required before access to private funds
 - NEI Task Force

▶ Waste

- ◆ Perception that 6x more waste generated by recycling
 - Incorrect (volume reduction of factor of 4 in HLW) – need to include risk in evaluation
- ◆ Require no orphan waste
 - Need a disposal path for GTCC and captured/conditioned I-129

What did we learn?

▶ **Effluents**

- ◆ 40 CFR190.1a based on experimental data 30 years ago – should be risk-based ☐
 - Discussions with EPA underway

▶ **Safeguards**

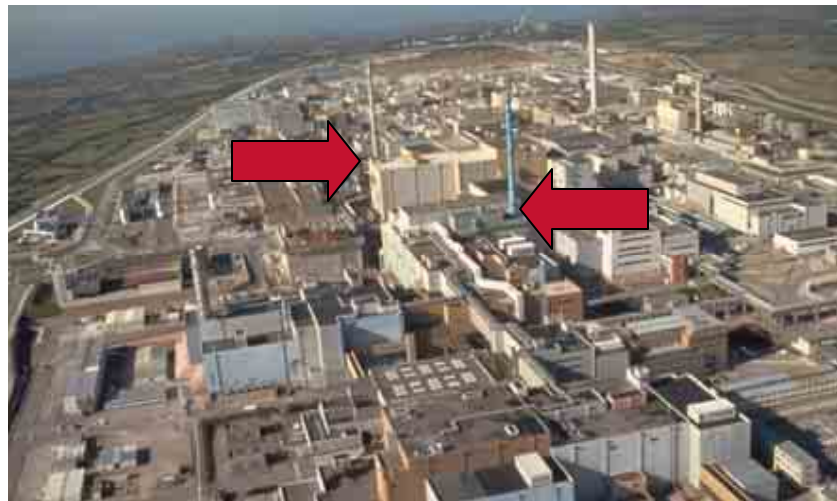
- ◆ Fully implemented at existing recycling plants; inspected by IAEA ☑

▶ **LWR recycling – interim step supporting nonpro**

- ◆ Transportation ☑
☐

▶ **Economics**

- ◆ Supports sustainable commercial model – 1.1 to 1.5 mill/KWh ☑
- ◆ Start with proven technology to access private funds



La Hague

▶ Legislation

- ◆ Nuclear Fuel Management Authority (new Fedcorp) Authorization
- ◆ Transfer of backend responsibilities from DOE to fedcorp
- ◆ Authorization for a new process for establishing the nuclear fuel fee
- ◆ Authorization for the fedcorp to assume all current and future contracts with nuclear utilities
- ◆ Amend NWPA to create integrated UNF strategy:
 - Interim storage
 - Commercial recycling
 - Permanent repository
- ◆ Fedcorp would make final decision on recycling and authority to implement

2-1/2 years later – results are supportive of closed fuel cycle but there is work to do before decision to recycle is made

A New Waste Strategy for a Nuclear Renaissance?

Our Recommendations

- ▶ **Allow the NRC to complete its job of reviewing the YM license application while DOE looks at alternatives**
- ▶ **Establish fedcorp to manage integrated strategy for used fuel including repository(ies), transportation and eventual recycling**
- ▶ **Take nuclear waste fund off budget and out of the annual appropriations process**
- ▶ **Task the Government (DOE or fedcorp) with evaluating options to close the fuel cycle**

***Need to align with the Administration's
commitment to: Economy/Jobs, Climate
Change and Energy Security***

- ▶ While we research/debate, much of the rest of the world is moving forward with nuclear power; some are recycling now; couple considering recycling
- ▶ There is short-term solution: Onsite storage
- ▶ Long-term UNF strategies are critical to the Nuclear Industry
- ▶ Ultimate disposal of commercial and defense waste is a must
- ▶ Recycling is a complementary option... and should be considered
- ▶ To succeed in developing a long-term sustainable solution, we must invest in R&D at National Labs and universities with support from industry for a “commercial” perspective

Need for transparency – keep the dialogue going to enhance public acceptance



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