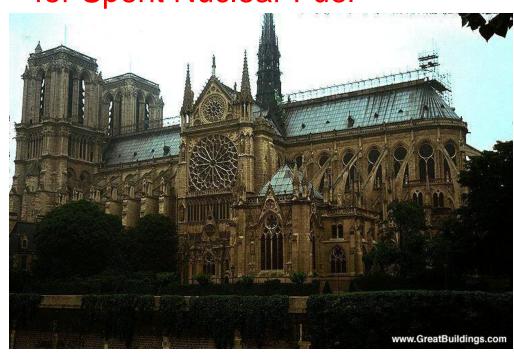
BRC Approach to the U.S. Institutional Framework

for Spent Nuclear Fuel





Notre Dame Construction: 1163-1250

Maintenance: 1250-present

WM2011 Feb. 28 Panel
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Storage Overpack





Institutional Framework

- Radioisotope Containment Standards: 10,000 or 100,000 or 1,000,000 years?
- Voluntary Participation of U.S. States:
 "Do or do not." There is no try.
- How many repository licenses to try for?
 - 1 = Monopoly (or 0 if 1 try fails)
 - 2 = Oligopoly? (or 1 if one try fails)
 - 3 = Market competition? (still 2 if 1 try fails)





- Yucca Mountain: 1,000,000 years
- Sweden & Finland: 100,000 years
- U.S. Generic (other than Yucca Mountain): 10,000 years



Exposure Pathways

- Groundwater: Technetium-99 etc.
- Air: Carbon-14
 Larger global dose from a permeable ridge
 but considered to be below regulatory concern.
 (Atmospheric release unlikely for Scandinavian designs)
- Neptunium-237: Isotopically Pure Fissile Material Source (half life 2.14 million years)

Question not addressed: Does locking up Np-237 in storage casks for 10,000–100,000 years or more make hypothetical future generations more or less safe?

Repository Containment Standards: What will the BRC recommend?



- There was input to the BRC from a broad spectrum questioning a 1,000,000 year standard.
- A simple solution is to revert to a 10,000 federal standard, while cooperating states could require more.
- It is not clear what the BRC will recommend.

2. Voluntary Participation of U.S. States?





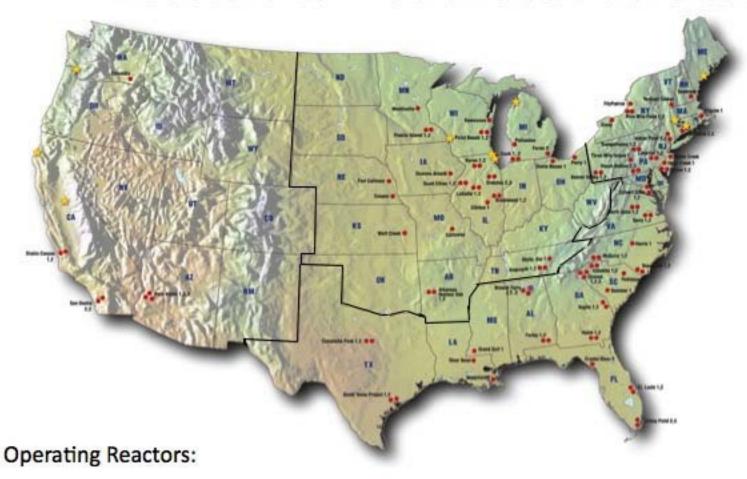
- The importance of building trust with states and local communities was a primary theme of input to the BRC.
- Voluntary participation of states will require a willingness to give them financial gains at ~tenths of total project costs. (Experience suggests that a few % or less will not suffice.)
- To start with a voluntary siting process, and then balk at the benefits to states required for success, would be fatal to the goal of building trust.
- The BRC seems aware of these issues, but it is not obvious that there is a consensus to provide clear recommendations concerning the level of compensation needed to get states' cooperation with repository licensing.

3. Try to License How Many Repositories?



- Existing law says: Two
- Incentives sufficient for just one state to volunteer would be perilously close to insufficient for any to volunteer.
- So, for adequate probability of voluntary licensing success, incentives must be adequate for more than one state.
- Sweden and Finland started two licensing processes for each repository site licensed.
- To be confident of licensing two repository sites and try for a fully competitive market, the United States should probably try to license three repository sites.
- Following the (successful) Scandinavian model in this regard,
 the United States would then seriously engage six states to start with.

Reactors & * Stranded Fuel Sites



8 in West; 31 Midwest+Arkansas; 65 South+East



How Many Repository Site Licensing Attempts Will the BRC Recommend?

- A consensus on this is not apparent in the BRC public record.
- It is not clear that the BRC reports will address this question at all.
- If the question is addressed, the recommended number of states to be seriously engaged may well be less than six.
- In any case, suggesting specific repository site locations is outside the purview of the BRC.



What Will Be the Outcome of the BRC Process?

- The BRC has a unique opportunity to help launch a viable institutional arrangement for spent fuel management, which could endure for centuries.
- The BRC understands and is earnestly engaged in the task.
- The greatest possible pitfall is lack of clarity on whether states' participation will be voluntary, and on the necessary incentives.
- Even given an optimal BRC report, timely and effective government action is far from certain.
- Success is possible. Much hangs in the balance.