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PBMR folder

## **PERSPECTIVES ON NEW NUCLEAR PLANT LICENSING**

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### **A DILEMMA**

- Without public subsidy, new nuclear plants will be built only if they can mimic the desirable economics of gas turbines:
  - low capital cost
  - short construction time
  - modularity

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### **A DILEMMA**

- Can this be done safely? Or are these objectives incompatible with nuclear technology?
- NRC policy decisions will play a decisive role in determining the economic viability of new plants — a difficult situation for NRC

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## **REGULATORY CHALLENGES**

- **NRC must ensure that these economic imperatives do not adversely affect**
  - **Safety**
  - **Risk of radiological sabotage**
  - **Waste management**
  - **Non-proliferation**
  - **Full public participation**

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## **EXAMPLE: PBMR**

- **PBMR characteristics fundamental to its economic viability deviate from traditional "defense-in-depth"**
  - **Lack of pressure containment**
  - **Significant reduction in number of safety-related SSCs**
  - **40-fold EPZ decrease (exploits GCR regulatory exemption)**

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## **PBMR FUEL PERFORMANCE**

- **Accident source terms must be accurately determined**
  - **Pebble performance very sensitive to initial conditions**
  - **Robustness of PBMR fuel is being oversold — significant fission product release can occur well below fuel degradation temperature**

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### **SABOTAGE: AN EVER- PRESENT RISK**

- No reactor design can be rendered "inherently safe" from radiological sabotage
  - Deliberate graphite fire in PBMR

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### **SABOTAGE**

- Features like absence of leak-tight containment, reduced EPZ, reduced safety system redundancy, reduced staffing levels must be evaluated in this context

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### **SABOTAGE**

- Sabotage resistance should be incorporated into advanced plant design (per 1988 ACRS recommendation)
- Target set analysis for new reactor designs should be high-priority activity for NRC

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## **PBMR WASTE DISPOSAL**

- Spent pebbles create a huge waste problem: per MWD, compared to spent LWR fuel:
  - Volume and weight are about 10 times greater — proportionate increase in storage and transport needs
  - Applicability of Waste Confidence Rule is unclear

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## **PRICE-ANDERSON: AN UNFAIR ADVANTAGE**

- Industry does not have a strong case for limited liability, especially for plants it claims are "meltdown-proof"
- NRC should not support a 15-fold retroactive assessment reduction for 100 MWe modular reactors — assessments are at least 10 times too low already!

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## **PUBLIC CONFIDENCE**

- Public confidence may be enhanced by "gold-plating" plants — inconsistent with eliminating containment, etc
- Part 52 (COL) and proposed elimination of formal hearing requirements for reactor licensing proceedings do not engender public confidence

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## **TIME: THE MOST IMPORTANT RESOURCE**

- NRC must resist the false sense of urgency for expedited new plant licensing being fostered by
  - White House "energy crisis"
  - Short attention span of deregulated utilities

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## **TIME**

- Aggressive licensing schedule for PBMR (20-month construction period, 2007 startup) is inappropriate for an immature technology
- "License by test" is just a PR exercise

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## **TIME**

- Severe accident fuel testing at maximum burnup should be required — will take time
- NRC should proceed more cautiously and ensure full resolution of all technical concerns is achieved

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