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PBMR folders*

**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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