



# Spent Fuel Management & Spent Fuel Storage in the USA



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# Topics

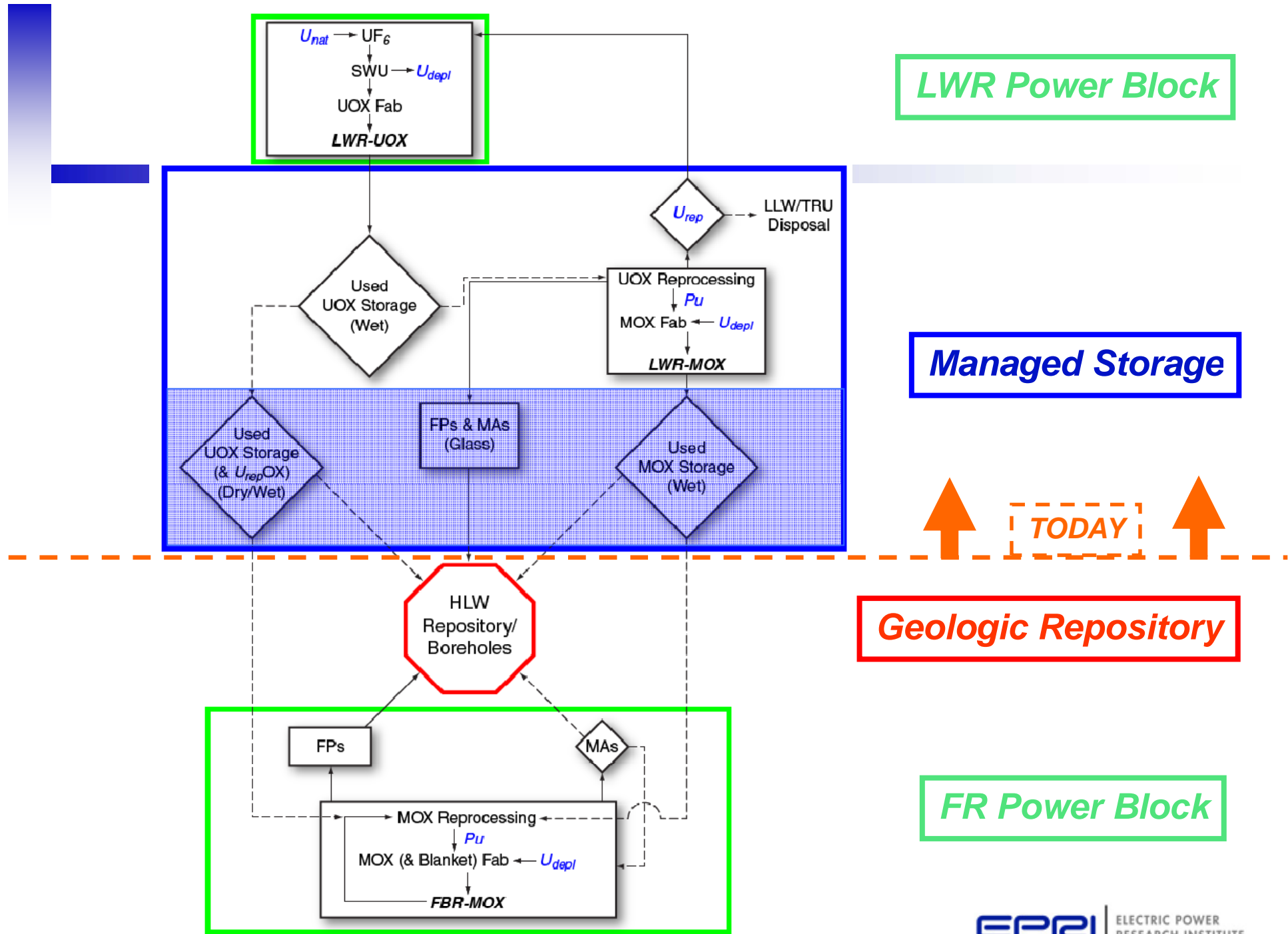
## 1. Spent Fuel Management

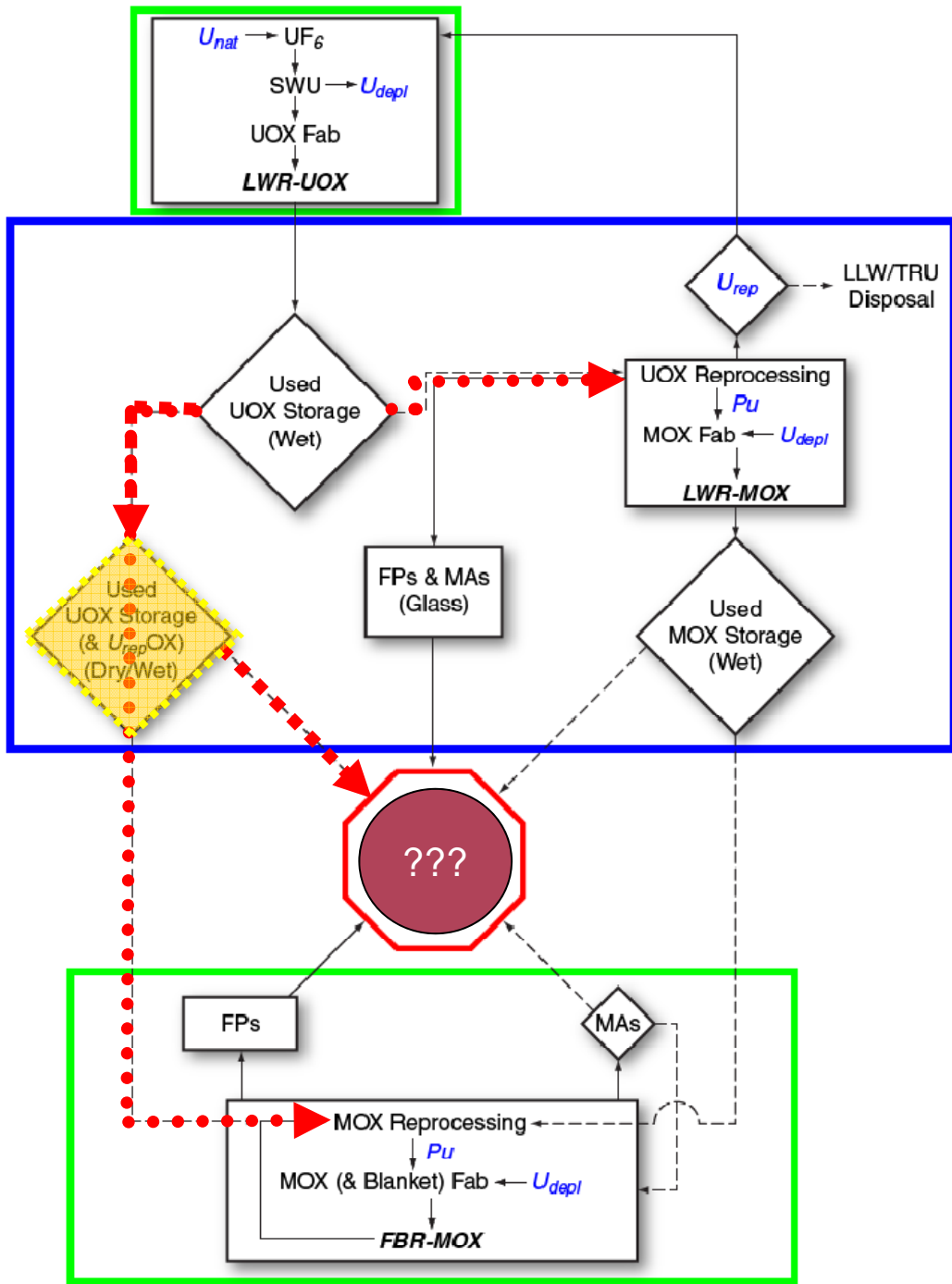
- **Managing Interim Storage – A Global Business**

## 2. Spent Fuel Storage in the USA

- **Extended Interim Storage**
- **Blue Ribbon Commission**
- **MIT Report on “The Future of the Nuclear Fuel Cycle”**

## 3. Summary





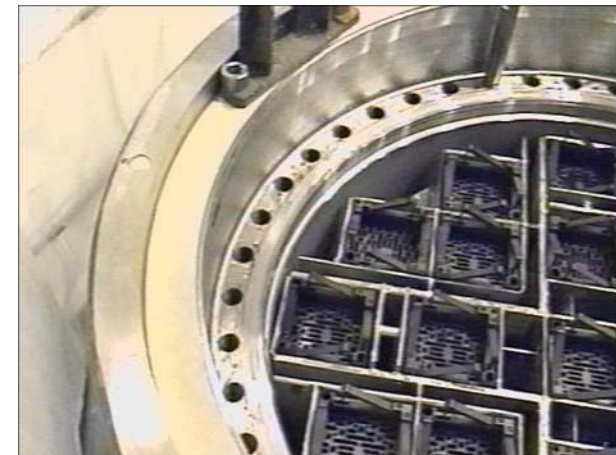
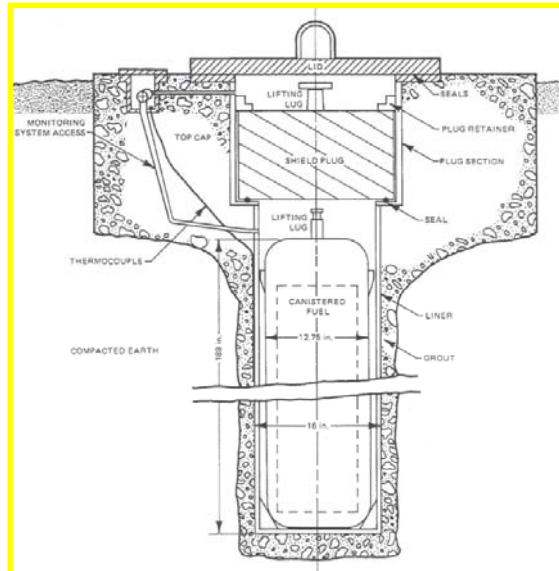
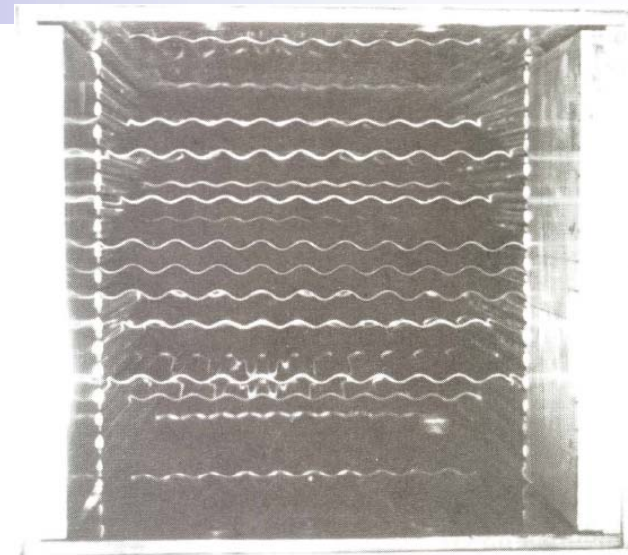
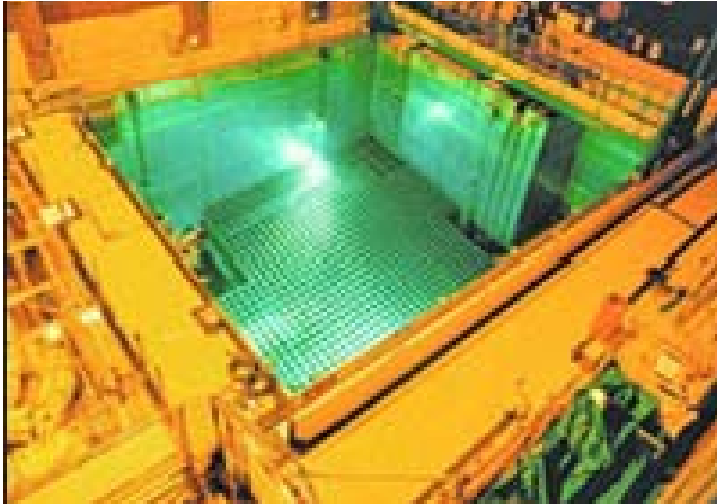
**LWR Power Block**

**Managed Storage**

**Geologic Repository**

**FR Power Block**

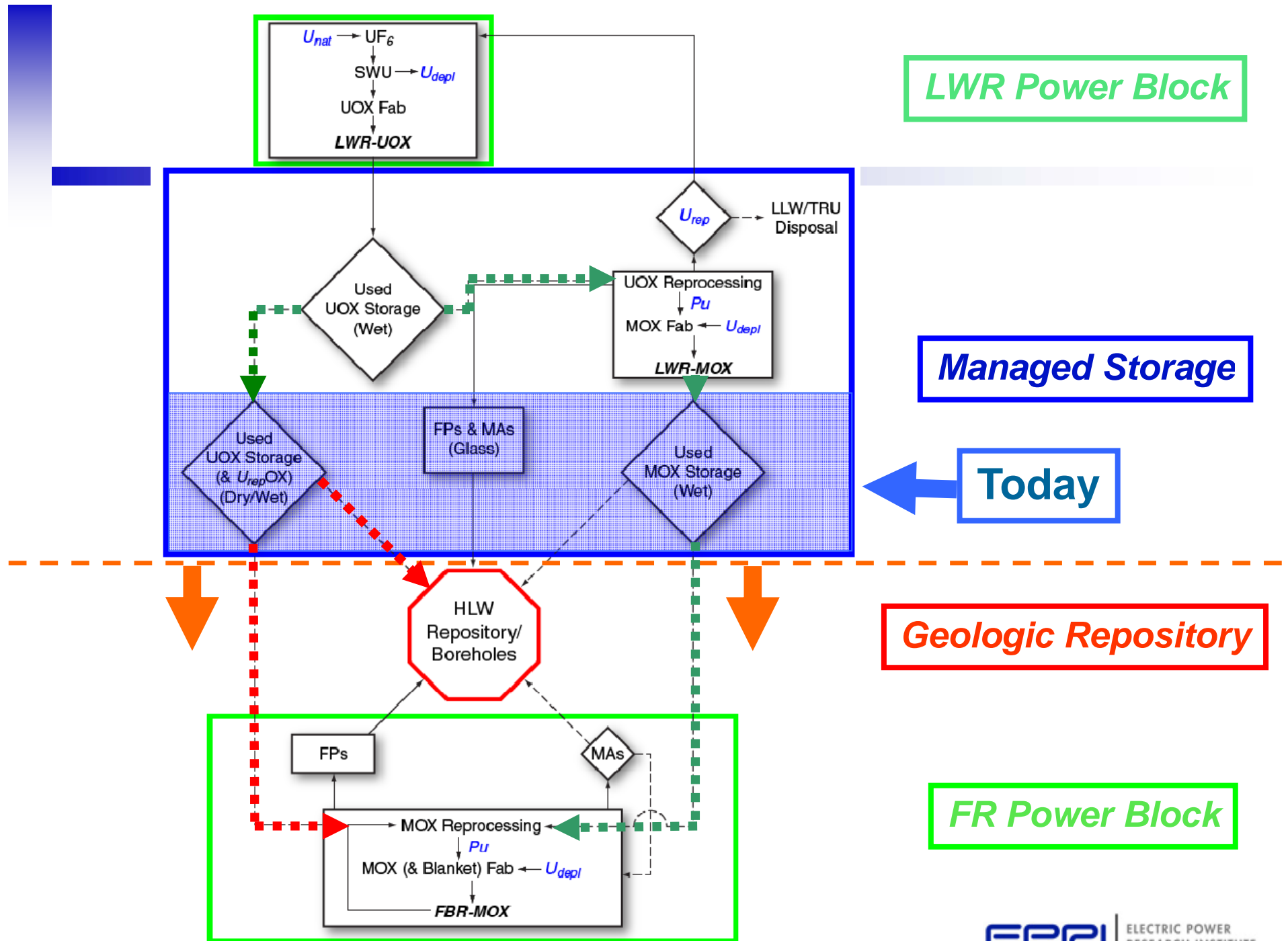
# Interim Storage Options



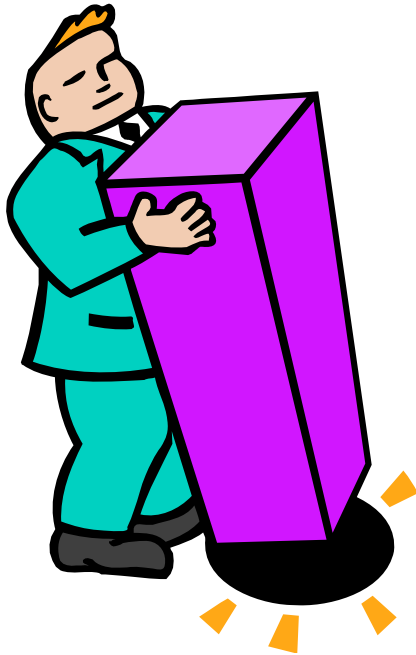
# Managed Storage – Dry Storage in the US

Over 1300 Casks Loaded in the US  
Located at 50 Plant Sites  
~25% of US Spent Fuel Inventory





# Blue Ribbon Commission



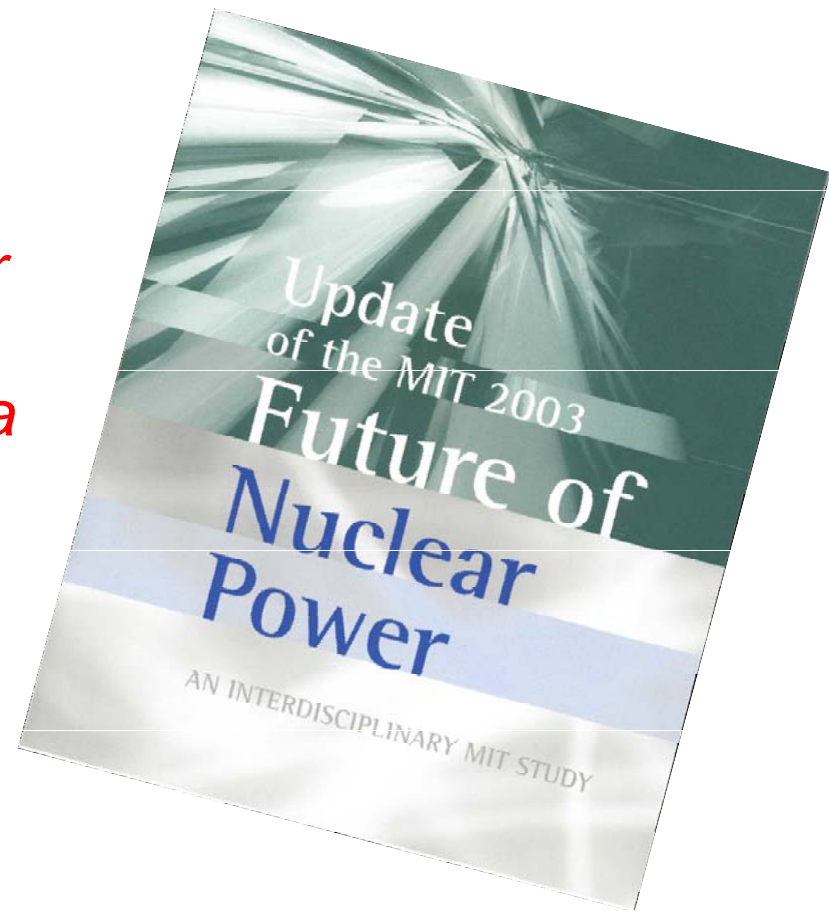
- 15 members
- Three subcommittees
  - Reactor and Fuel Cycle Technology
  - Transportation and Storage
  - Disposal
- Draft report due July 2011
- Final report due January 2012



# Update of the MIT 2003 “Future of Nuclear Power” (May 2009)

## Key Message

*“The sober warning is that if more is not done, nuclear power will diminish as a practical and timely option for deployment at a scale that would constitute a material contribution to climate change risk mitigation”*



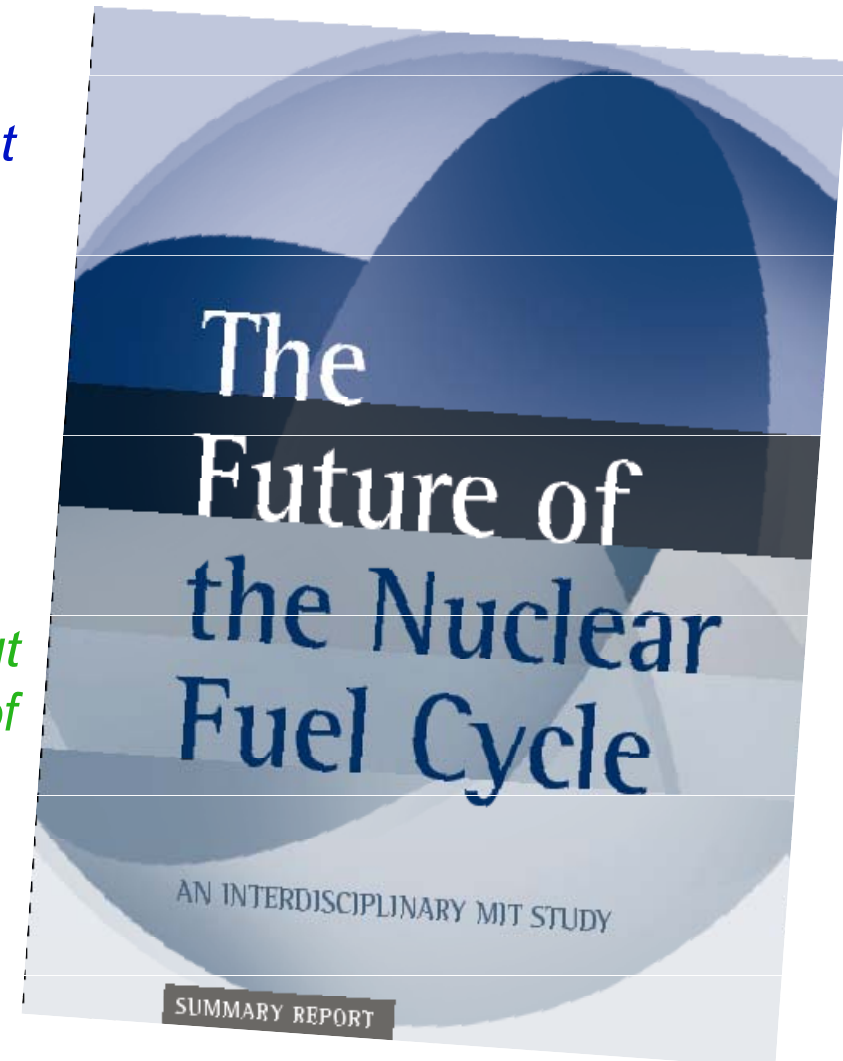
# MIT 2010 “The Future of the Nuclear Fuel Cycle” (September 2010)

## Finding

*Managed storage can be done safely at operating sites, centralized storage facilities, or geological repositories designed for retrievability.*

## Recommendation

*Planning for long-term managed storage of spent nuclear fuel – for about a century – should be an integral part of nuclear fuel design. While managed storage is believed to be safe for these periods, an R&D program should be devoted to confirm and extend the safe storage and transport period.*



# Summary

- Interim storage of spent fuel
  - Key element of the nuclear fuel cycle
  - Provides flexibility
  - Technological benefits: decay of heat-generating nuclides
- US Experience
  - Risk information and operational performance
  - Potential “hot-button” issue with public
- Tangible (and lasting) progress toward a permanent disposal path is required to overcome the main societal obstacle to wide acceptance of nuclear energy

# References

- EPRI 1020307 “Advanced Nuclear Fuel Cycles – Main Challenges and Strategic Options”
  - [http://my.epri.com/portal/server.pt?Abstract\\_id=0000000000010203](http://my.epri.com/portal/server.pt?Abstract_id=0000000000010203)
- MIT’s “Update to MIT 2003 Future of Nuclear Power”
  - <http://web.mit.edu/nuclearpower/pdf/nuclearpower-update2009.pdf>
- MIT’s “The Future of the Nuclear Fuel Cycle”
  - <http://web.mit.edu/mitei/docs/spotlights/nuclear-fuel-cycle.pdf>
- Blue Ribbon Commission
  - <http://brc.gov>