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Potential Interface Issues in Spent Fuel Management

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1 INTRODUCTION

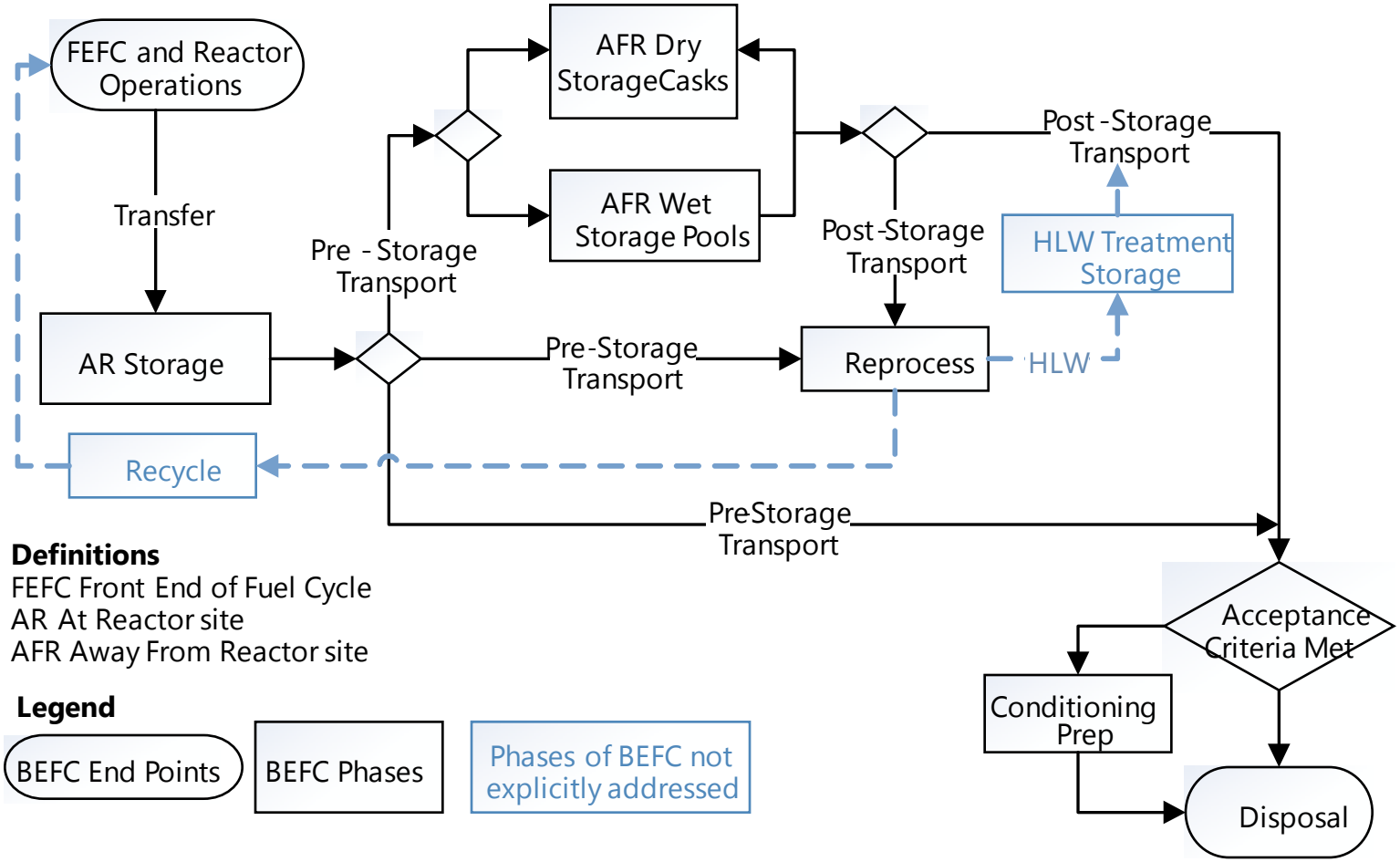
- IAEA Member States opting for the “wait-and-see” approach have indicated that one benefit of waiting is to learn from experience of other countries.
- A systematic approach is needed to ensure that influences from and impacts on all phases of fuel cycle are taken into account when making decisions.
- Opportunities are lost if interfaces are not identified and addressed in the early stages.

Objective

- Suggest a process for systematically identifying and evaluating the potential interface issues in SFM, and

- Recommend effective management based on the experience of Member States before losing timely resolution opportunities.

2 PROCESS



Flow Diagram of Interfaces with and within the Back-end of the LWR Reactor Fuel Cycle

3 IDENTIFICATION AND EVALUATION OF INTERFACES

3.1 Phase-Phase Matrix

<table>
<tr><th>Phases
Phases</th><th>Wet Storage (AR, AFR)</th><th>Dry Storage (AR, AFR)</th><th>Transport</th><th>Reprocess and Disposal</th><th>Direct Disposal</th></tr>
<tr><td>Front End of Fuel Cycle and Reactor Operations</td><td colspan="3">§3.1.1</td><td rowspan="4" colspan="2">§3.1.1</td></tr>
<tr><td>Wet Storage (AR, AFR)</td><td rowspan="3" colspan="2">§3.1.2.1</td><td rowspan="3">§3.1.2.2</td></tr>
<tr><td>Dry Storage (AR, AFR)</td></tr>
<tr><td>Transport</td></tr>
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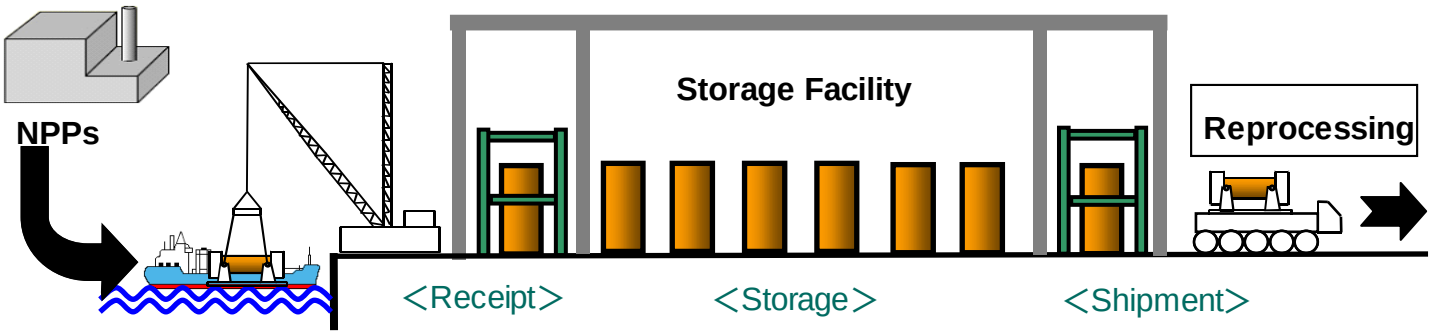
3.1.2 Specific Evaluation of Phase/Phase Matrix Interfaces

◆Wet Storage and Dry Storage

✓ Degradation During Storage

Older fuel could become brittle and require additional fuel handling and/or packaging requirements.



◆Transport and Storage

Transport licenses may lapse during the duration of the storage license. If the transport regulations change, the cask or canister may no longer be licensable.

3.2 Participant-Participant Matrix

	Regulator	Bordering/Transit Countries	Industry
Policy Maker	§3.2.2.1	§3.2.2.4	§3.2.2.2
Regulator	§3.2.2.3		§3.2.2.5
Bordering/Transit Countries	§3.2.2.4		§3.2.2.6
Industry	§3.2.2.5	§3.2.2.6	§3.2.2.7

3.2.1 Cross-Cutting Participant-Participant Issues

- The chief cross-cutting issue with respect to the participants in the BEFC is the need for clearly defined ownership and accountability for management and disposition of SF.
- The technical, jurisdictional, legal and financial obligations will have to be thoroughly analysed in order to clearly identify the scope of responsibilities of each party.
- A long-term vision and commitment to implementation is essential for success.

3.2.2 Specific Participant-Participant Issues

◆Regulator and Policy Maker

- ✓ The regulator is responsible to advise and inform the policy maker on technical matters and on the effects of policies with respect to assuring the safety of the public and the environment.

◆Industry – Industry

- ✓ In case where the reactor cooling pool is nearing its capacity, delays in cask availability could result in plant shutdown.
  - **Effective Planning and Preparation**
  - **Contingency planning**
  - **Careful Coordination and Contractual Arrangements**
  - **Execution and follow-up**

3.3 Public Confidence 1/2

Past experience has shown that failure to effectively identify and address public concerns has resulted in opposition that has caused cost and schedule delays and has hindered the operation of nuclear facilities. Conversely, public support can encourage favourable conditions/politics for BEFC.

- *Policy Maker/Public Interaction*
- *Regulator/Public Interaction*
- *Industry/Public Interaction*

3.3 Public Confidence 2/2

- ✓ *Industry and Regulator with Regional Governments*

Citizens and organizations in bordering areas often perceive risks without matching benefit. Consequently, it is important for both the regulator and the industry to consider and interact with outlying communities and regional governments who can influence siting and operational requirements.

4 KEY CONCLUSIONS-1/4

- Assuring compatibility of schedules, equipment, and acceptance criteria are key interface issues.

- Effective integration begins early in the planning process.
  Opportunities are lost if interfaces are not identified and addressed in the early stages of each of the BEFC phases.

4 KEY CONCLUSIONS-2/4

- Record keeping is an important issue for each interface.

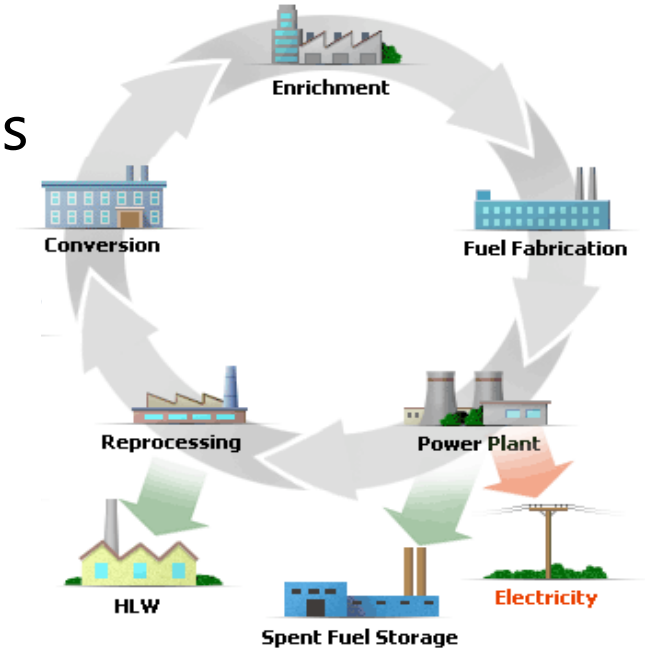
- As storage periods are extended and countries contemplate consolidation into regional or centralized dry storage facilities, this interface will take on increasing importance – particularly if inspections and/or repackaging are needed to prepare fuels for long-term storage.

4 KEY CONCLUSIONS-3/4

- Additional pro-active efforts are needed from every participating organization in the BEFC to ensure early attention to public acceptance in the siting, safety, operation, duration, oversight, and path forward. Accurate information must be provided in a user-friendly format.

4 KEY CONCLUSIONS-4/4

- Commitment to a clear and achievable path to an endpoint gives the public confidence that “interim” storage facilities will not become “permanent” and that SF can be successfully managed.



- The existence and importance of interfaces depend upon the national energy policy, objectives of the nuclear programme., maturity of the nuclear programme., size of the programme., the regulatory framework, the fuel cycle employed, and other country-specific considerations.

5 ACKNOWLEDGEMENTS

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