

A summary of the interim storage of legacy fuel from the FGMSP storage pond in damp vented containers (Self Shielded Boxes)

Paul Hughes

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FGMSP Background

The First Generation Magnox Storage Pond (FGMSP) complex is an ageing structure at the Sellafield Site.

First built in the 1950s.

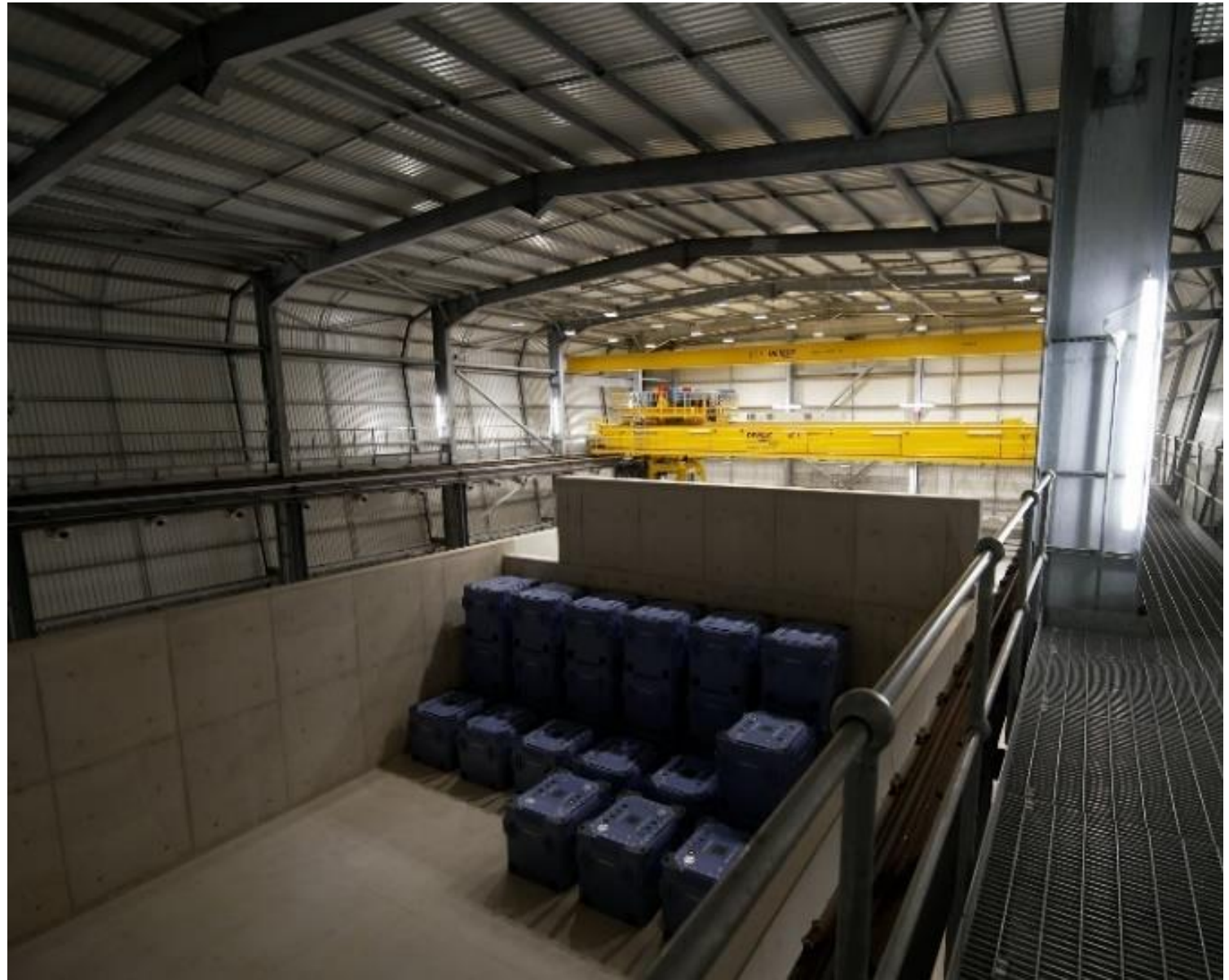
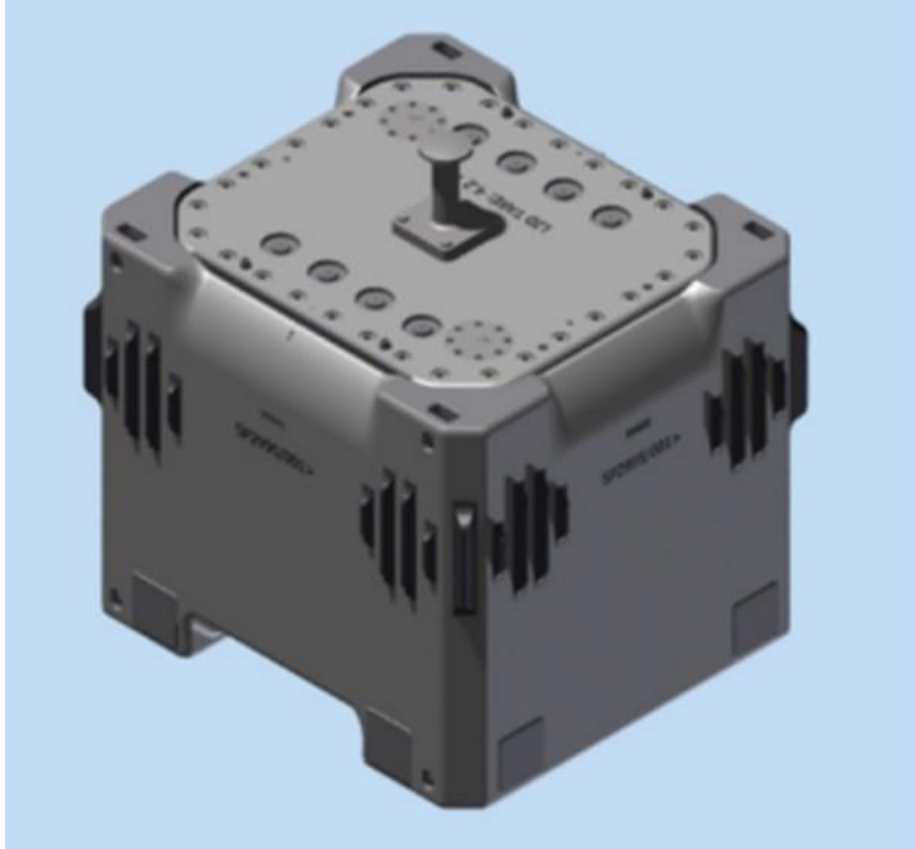
Used to decan spent fuel prior to reprocessing.

Operated until the 1980s when newer facilities became available

Contain significant amounts of spent fuel, corrosion product sludge, ion exchange media and Miscellaneous Beta Gamma Waste.



SSB and ISF



SSB Substantiation

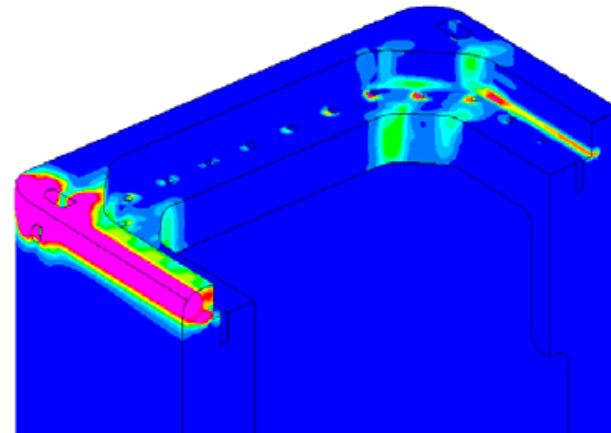
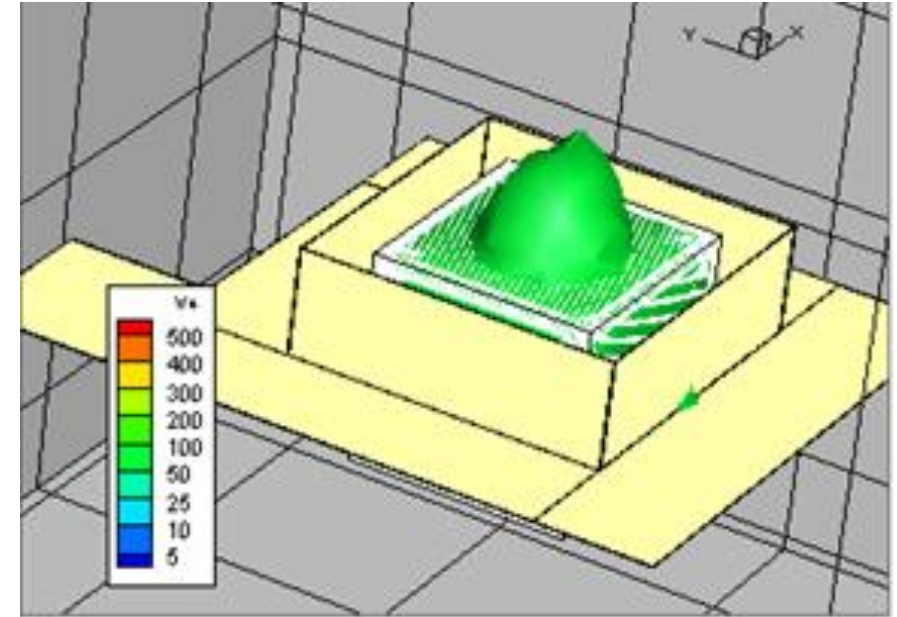
The SSB has been substantiated against the following hazards:

Normal Operations:

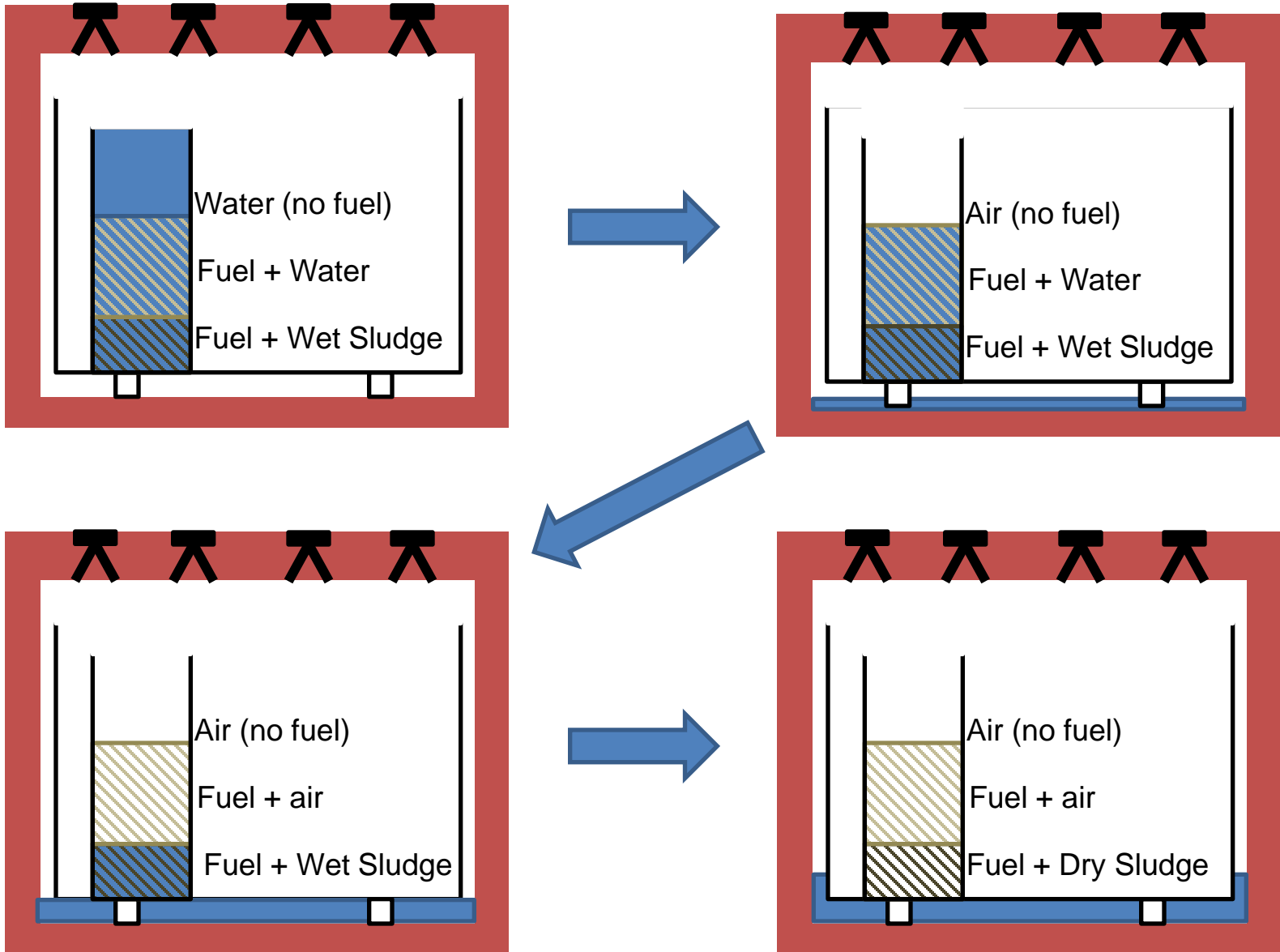
- Radiation Shielding
- Chronic Hydrogen generation & Oxygen consumption
- Corrosion of SSB and contents
- Thermal Stability
- Aerial activity emissions
- Criticality

Fault Conditions:

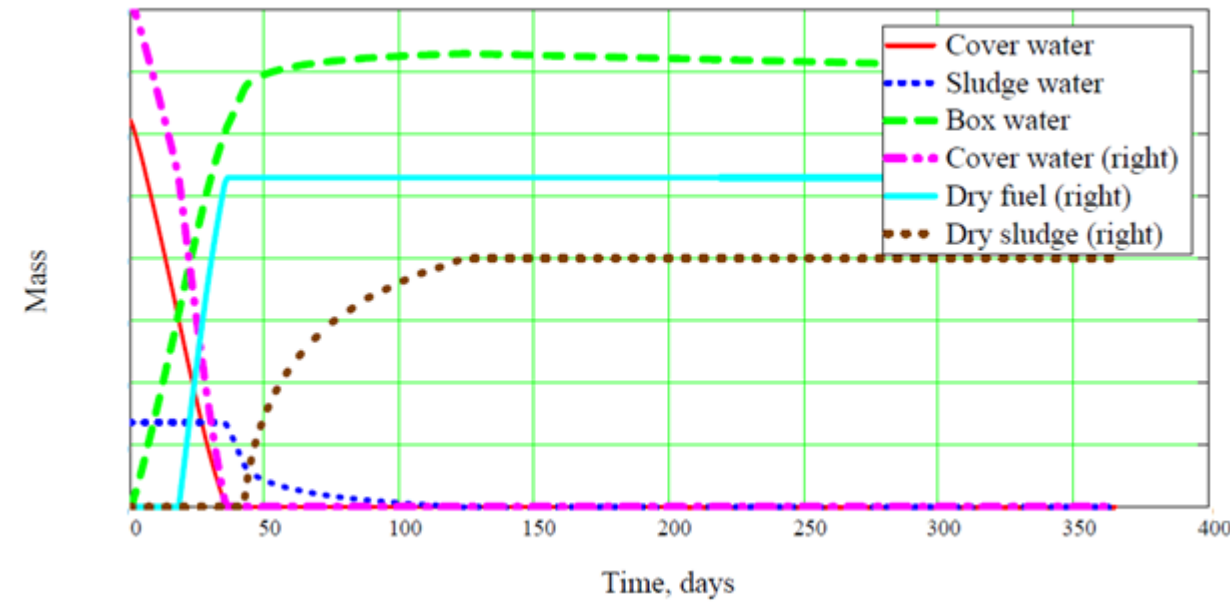
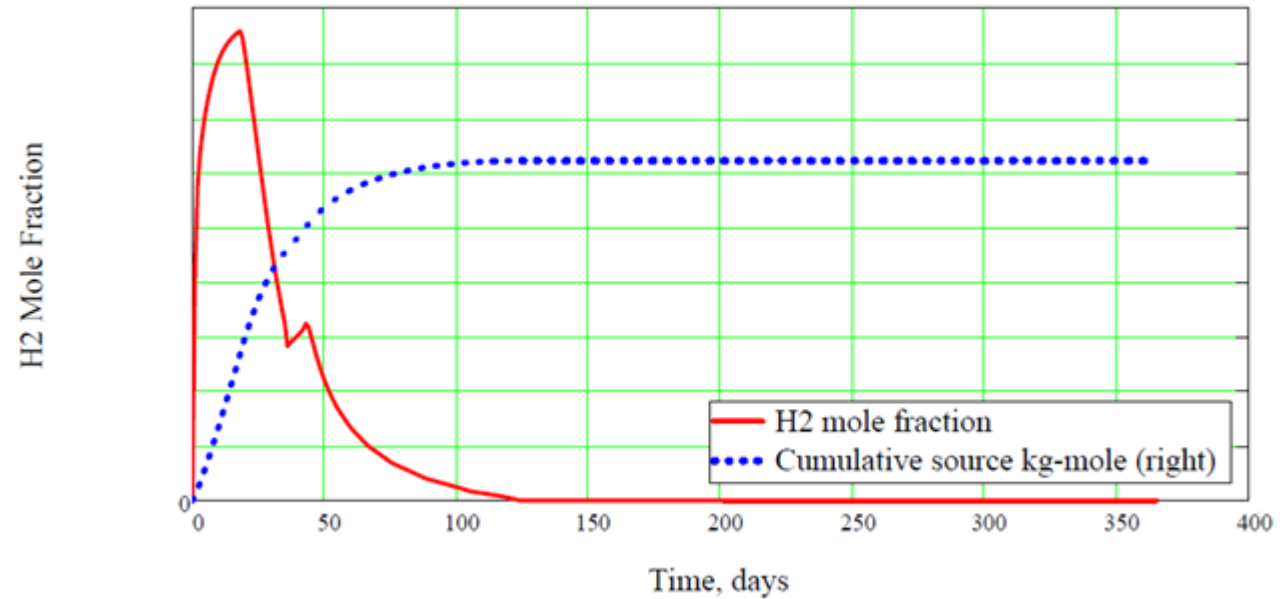
- Filter Blockages
- Sudden gaseous releases / Deflagrations
- Misconsignments
- External fires
- Dropped load scenarios



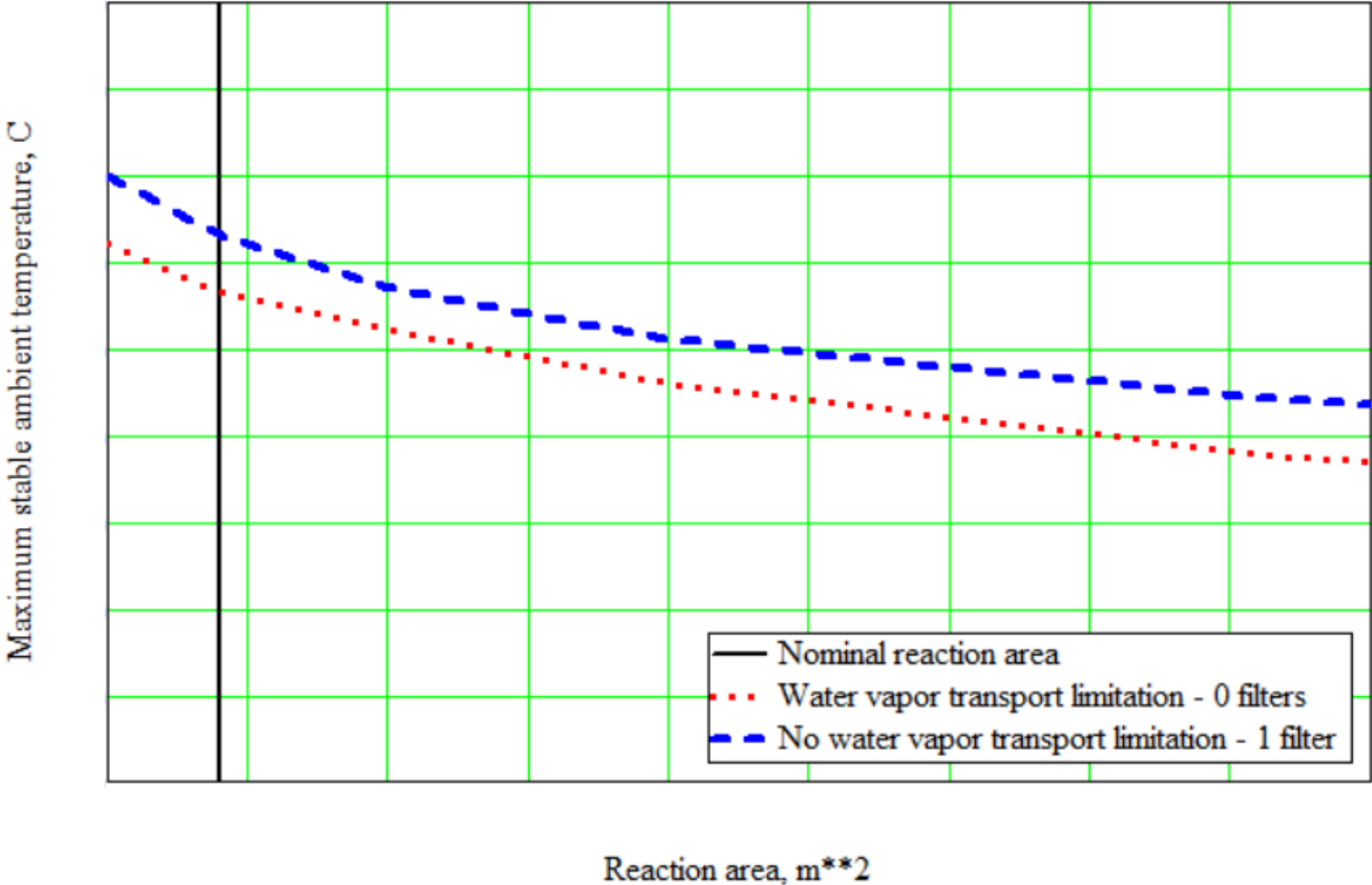
SSB Evolution: Water Movement



SSB Evolution: Hydrogen concentration and water content



Thermal stability during storage in ISF



COMPARISON OF SSB TO IAEA RELEVANT GOOD PRACTICE

Between IAEA and UK domestic regulators/ government, there is a huge amount of RGP.

This is very helpful but also makes a significant task to review a project against the RGP.

The review of the storage of fuel in SSBs, identified the following areas:

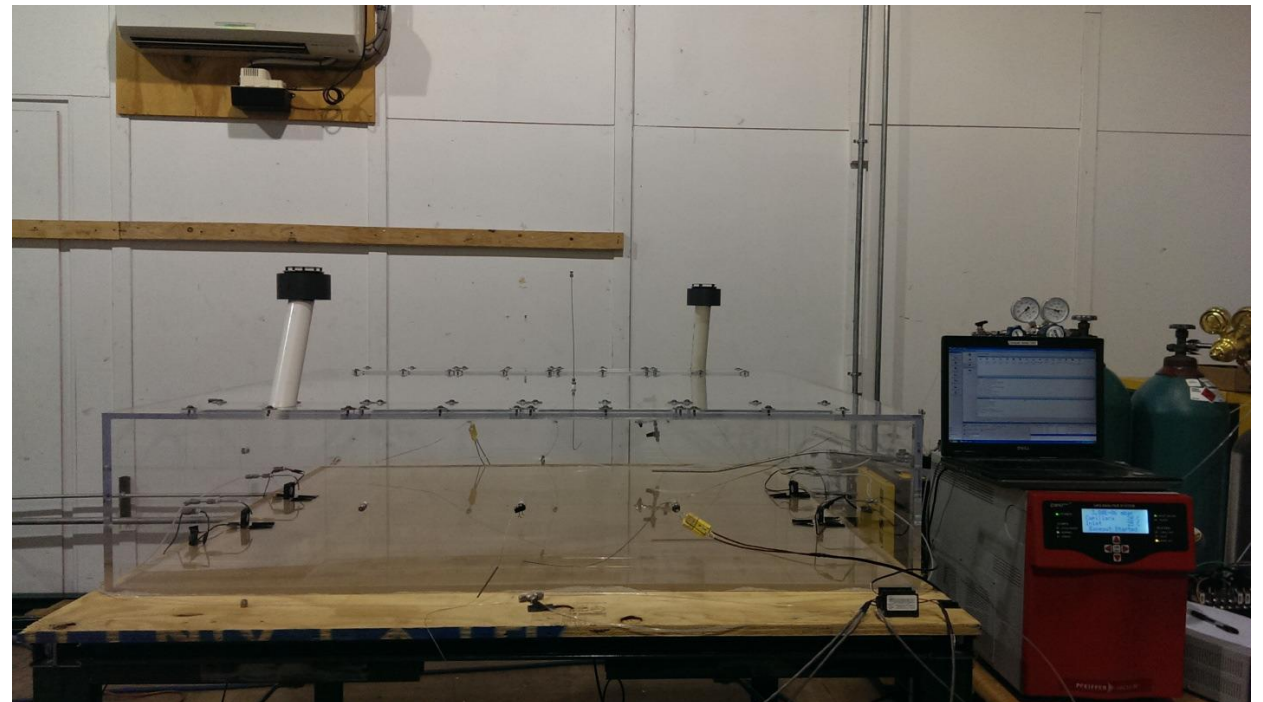
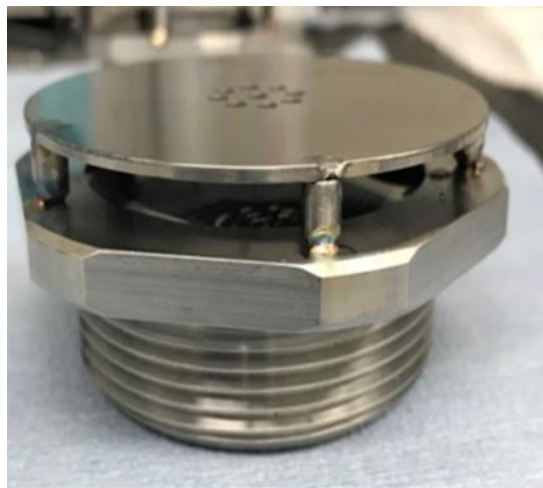
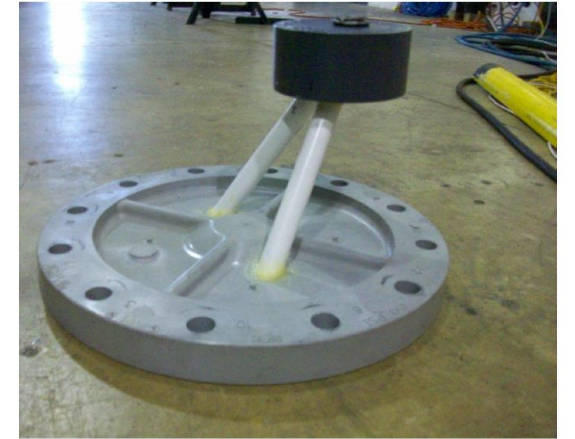
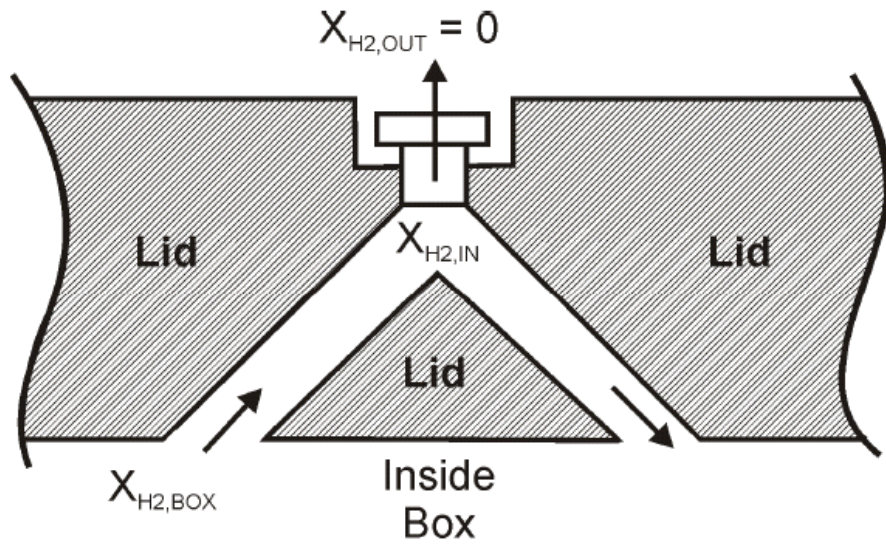
1. Waste Conditioning
2. Multiple Barriers of Containment
3. Detection and Recovery

It is recommended that:

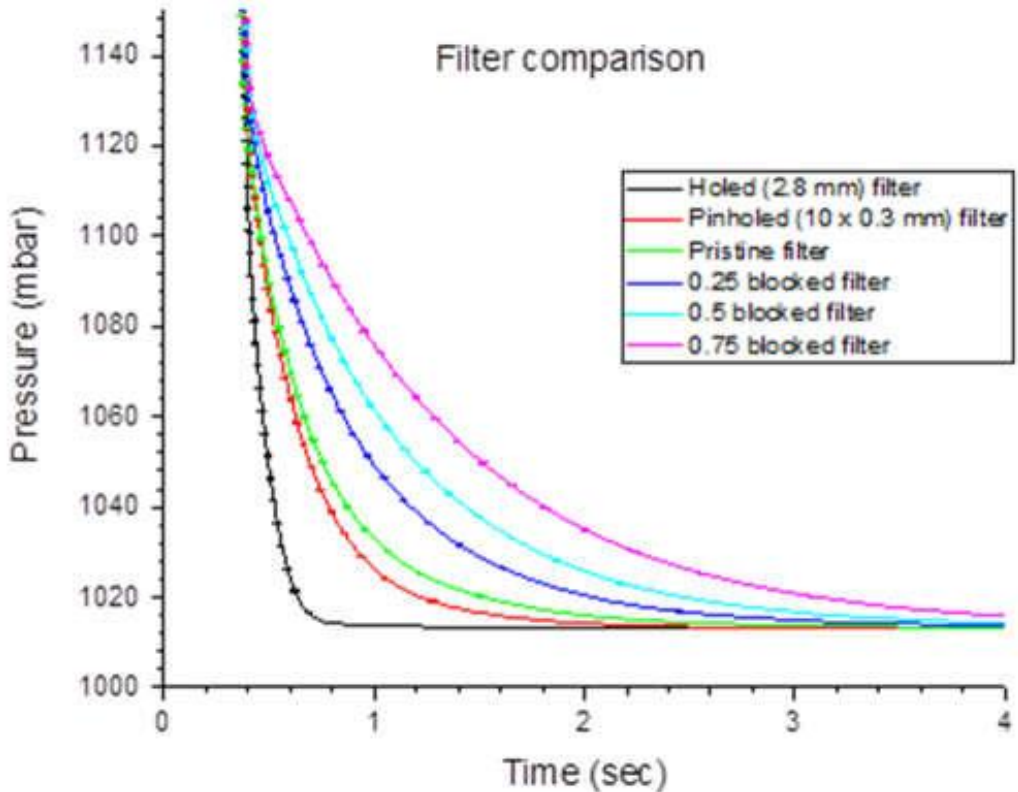
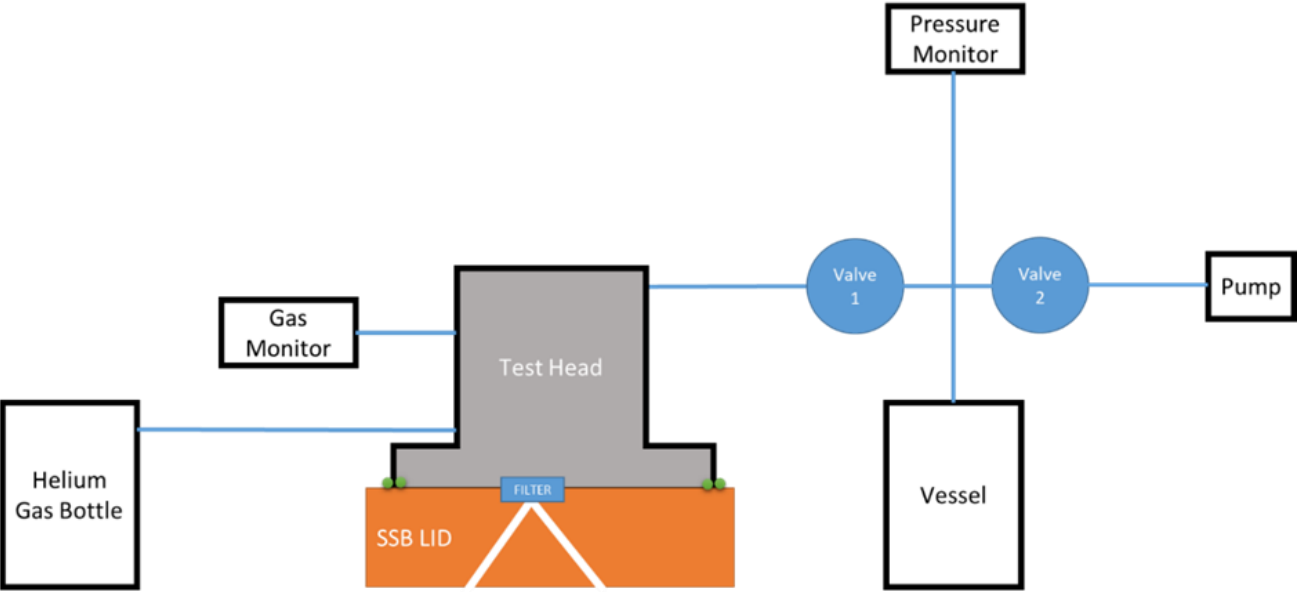
1. Projects seeking to store fuel undertake a review of RGP in the early stages of development.
2. The IAEA and Domestic Regulators recognize that there are scenarios in which deviation from the RGP is required.
3. Where deviation from RGP is required, projects prepare long term plans regarding how to return to RGP compliance.

TECHNOLOGY DEVELOPMENT SUMMARY:

A means of enabling gas exchange from a thick-walled container



TECHNOLOGY DEVELOPMENT SUMMARY: A means of testing the filters in a nuclear waste laden SSB



TECHNOLOGY DEVELOPMENT SUMMARY: A means of remotely inspecting SSBs



TECHNOLOGY DEVELOPMENT SUMMARY: Excluding salt contamination whilst not inhibiting filter performance

