

Introduction

MMI Engineering has specialist knowledge in the assessment of flasks and packages for transport and storage of waste, fuel, and other special nuclear material. The MMI team is highly experienced in the use of modelling and simulation tools for such assessments and the application of regulatory codes and standards. Only Suitably Qualified and Experienced Personnel (SQEP) are appointed to carry out nuclear analysis tasks.

Assessments of Storage Arrangements

MMI's experience includes:

- Calculations of thermo & hydrodynamic (water carry-over) conditions within spent fuel canister designs for geological disposal
- Integrity Assessments using the Failure Assessment Diagram (FAD) approach for canister lifetime scenarios of storage, transportation and disposal
- Seismic Assessments in support of optimised uranium hexafluoride stacking arrangements

Thermal, Flow & Stress Assessments

MMI's experience includes:

- Thermal and ventilation assessments of transport for vitrified wastes in Areva packages TN28VT & TN81 and exotic fuels in Safkeg & INS3578
- Thermal assessments of fuel transport flask designs, including Excellox 3, 4-MOX, 6, & 8 & NTL-11
- Stress, fatigue & buckling assessments of transport container designs in accordance with US NRC regulatory guides
- Review of weld integrity & weld remediation programme in support of return to service of the A2 AGR flask design

Accident Conditions: Package Impact & Fire Assessments

MMI's experience includes:

- Impact analysis of SF disposal canister for potential drop incident scenarios during canister moves pre-emplacment

- Impact & thermal analysis for IAEA Type B transport container requirements for accident condition of transport (9m drop test, 800°C fire test)
- Review of transport container capability to withstand falling debris impacts caused by collapse of a facility loading bay during a seismic event

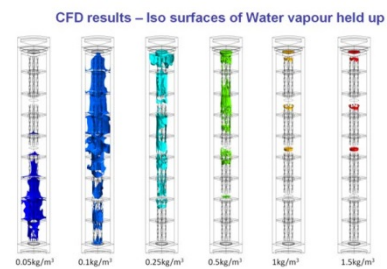


Figure 1: Iso-Surfaces of Water-Vapour Hold-up during Interim Storage prior to emplacement

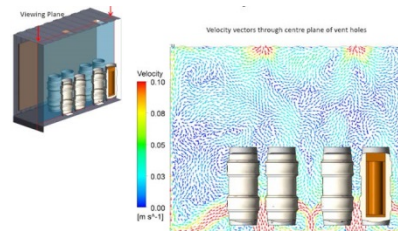


Figure 2: Velocities in passively-ventilated ISO container for shipment of packages containing exotic fuels

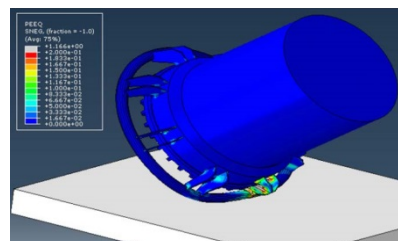


Figure Figure 3: Plastic strain in container handling ring during IAEA accident condition impact testing