



Sellafield Ltd

**Spent Fuel Management**

# Spent Fuel Management at Sellafield

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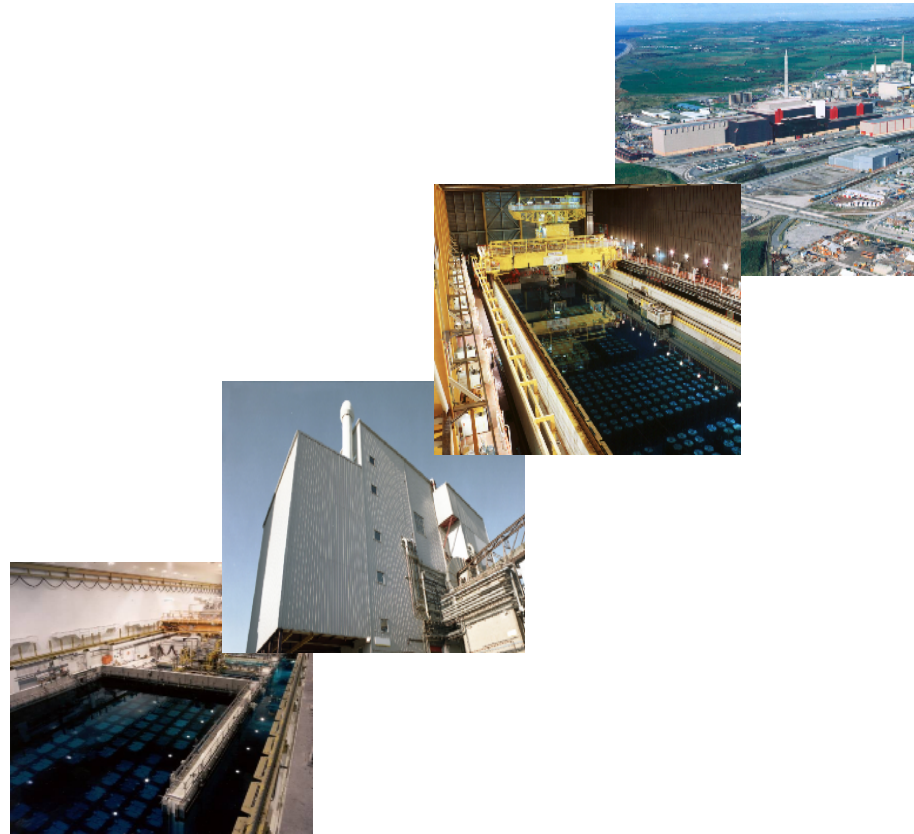
Spent Fuel Management

# Spent Fuel Management

- Alignment of two reprocessing units
  - Stabilise operations
  - Achieve predictable operations
  - Optimise operations
- Multi-disciplined mobile workforce
- Secures the generation of 18.5% of UK power supply
- Potential solutions for UK fuel strategies

# Spent Fuel Management

- Maintains UK electricity generation capability through storage and reprocessing of AGR and Magnox spent fuel
- Brings significant revenue into NDA from overseas reprocessing contracts such as LWR/BWR
- Supports delivery of hazard reduction by facilitating the managed closure of the fleet of Magnox power stations
- Manages safe and secure storage of Plutonium and Uranium products
- Directly employs 1800 people plus in excess of 300 functional support staff



# Spent Fuel Management

- Strategic Underpinning
  - LTP10 build
  - Asset condition and capability
    - Remnant lives of dissolvers
    - Medium Active Evaporator
    - Charge tube replacements
  - Early Calder Hall defuelling
- Operational Underpinning
  - Throughput rates
  - Organisational alignment
  - Mobilised workforce
  - Pond storage (MEB removal)
  - Value stream analysis
  - Corroded fuel processing
  - Flask fleet restoration



# Thorp key achievements

## Strategic Underpinning

- Some quality asset improvement work is being completed during the current engineering outage
- Dissolver inspections
- MASFE inspection
- Main pond handler reliability improvements

## Operational Underpinning

- No significant safety issues
- 165t of fuel sheared in 09/10 to date, 220te reprocessed through Chemical Plants, await indications from Evaporator inspections
- Anticipate a further 52t campaign commencing during January 2010
- Good throughput rates obtained in Chemical Plants up to 4.5tpd
- Demonstrated performance of the replacement MASFE and Centrifuge B

# Key issues for Thorp

- Downstream availability of High Active Liquor Management
  - HA Evaporator A operational in support of Magnox HAL, after recent failure of cooling coil in Evaporator B
  - HA Evaporator C currently under assessment following coil inspections to determine future support to reprocessing operations
- Current production restricted, creating several pressure points that need short term management. These issues have potential to impact on long term strategy
  - safe storage and reprocessing of UK AGR fuel
  - reprocessing of remaining overseas fuel
  - economics of THORP business
  - impact on future workforce numbers

# Magnox key achievements

## Strategic Underpinning

- Opportunistic maintenance and asset care carried out during unplanned outages to underpin plant reliability and condition
- Dissolver internal inspection carried out – wear profile as expected
- Improvement activities to increase AGR waste exports to store proving to be successful

## Operational Underpinning

- Reprocessing operations restarted as planned following the return to service of Evaporator A
- BE flask demands met in the period
- AGR dismantling operations ongoing
- Moves of residues to Plutonium Finishing and Storage has been achieved safely and ahead of schedule to facilitate decommissioning of a redundant fuel assembly line - represents an excellent example of co-ordinated working across a multitude of different working groups

# Key issues for Magnox

- Magnox reprocessing operations hampered this year due to two significant unplanned outages
  - Antimony 125
  - Evaporator B availability
- Low Magnox fuel inventory impacting ability to blend
- Lower than required Magnox fuel receipts has led to:
  - Continued collaborative working with Magnox North to facilitate increased flask moves to Sellafield
  - Flask Delivery Recovery Plan
  - Review of early Calder defuelling (440tes)
- Continued improvement in plant reliability and condition required

# Spent Fuel Reprocessing – Current Status

- Both Magnox & Thorp plants are operational
- Both impacted by the unplanned Evaporator outage to different degrees – constraints are well understood
- Fuel inventories do not pose risk to receipt and storage capacity