REGUARD: A DIGITAL TRACK AND TRACE WASTE MANAGEMENT SYSTEM FOR NUCLEAR DECOMMISSIONING

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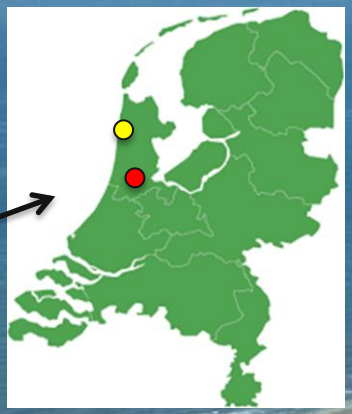
CONTENTS



NRG

Petten site, The Netherlands

NRG IN A NUTSHELL

- Nuclear Research & consultancy Group.
- Largest producer of medical isotopes in Europe.
- World market share over 30%.
- Every day 30 000 patients worldwide are treated with isotopes for diagnosis, therapy or pain relief produced by NRG.
- Primary nuclear service provider of the Netherlands.

LOW FLUX REACTOR (LFR)

- First criticality in 1960, thermal power of 10 kW.
- Upgrade to 30 kW in 1983.
- Training and education for personnel.
- Material research.
- Operations stopped in 2010.

LFR NUCLEAR DECOMMISSIONING

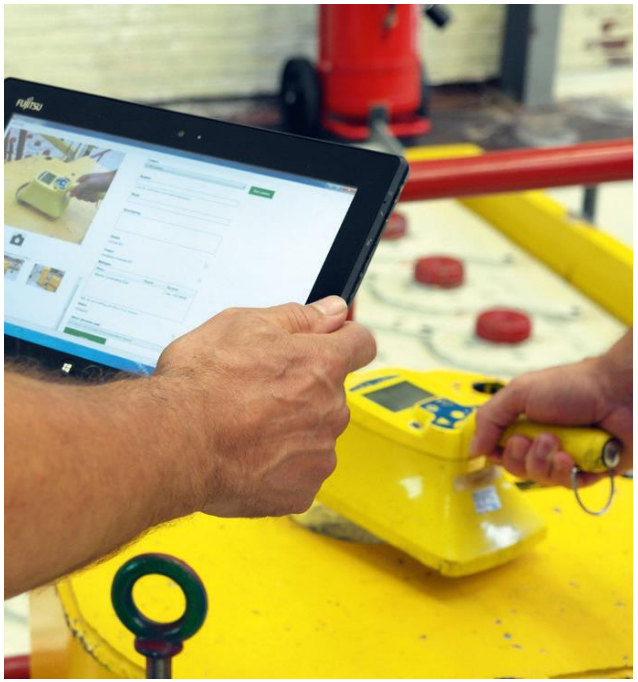
- Cost estimate: € 5 million.
- Expected radioactive material: 64 tons.
- Guideline for the clearance of materials during the decommissioning of a nuclear facility.
- Traceability requirement.

REGUARD

- In-house built digital waste management system.
- Web-based application.
- Exportability of stored data for reporting purposes.
- Modular database, extendable without influencing previously entered data.

REGUARD

- Register complete nuclear waste flow process.
- Portable device for entering data and pictures.
- Insight in:
  - Origin of the nuclear waste.
  - Performed treatments.
  - Performed measurements.



REGUARD

- Every object and container is assigned a unique registration number.
- Extendable relevant information, such as:
  - Mass.
  - Nuclide specific activity.
  - Dose rate.
  - Location.
  - Status.
  - Description.
- Digital track and trace of all reused, recycled and disposed components.
- Compliant with Dutch regulations.

RESULTS

- Radioactive material: 46.5 tons.
  - Barite concrete 22.7 tons.
  - Concrete with steel 9.9 tons.
  - Graphite 5.7 tons.
  - Concrete (foundation) 2.6 tons.
  - (Stainless) steel 2.3 tons.
  - Concrete (remainder) 1.7 tons.
  - Lead and aluminum 1.4 tons.
  - Sand 0.2 tons.
- All objects (free release and radioactive) categorized by their waste route and disposed in the corresponding way.
- Full traceability of every object realized.
- Dutch regulator indirectly approved the usage of ReGuard.

RESULTS

Before: LFR hall

After: green field

DISCUSSION

- Manual entry of data, preferably the measurement devices communicate directly with ReGuard.
- Progress through wireless barcode equipment.
- Lengthy load times depending on available network, prolonging time of presence of operators in a radiating environment.
- ReGuard is only partly translated to English.

CONCLUSION

- ReGuard was successfully applied in the nuclear decommissioning of the Low Flux Reactor.
- This waste management system features full traceability of every registered object in compliance with the Dutch regulations.
- ReGuard is currently being used in the nuclear decommissioning of laboratories on the premises of NRG.

QUESTIONS