56th Annual Meeting on Hot Laboratories and Remote Handling

Used target management from Advanced Rare Isotope Laboratory (ARIEL)

DESIGN OF HOT CELL FACILITY

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Mamallapuram
Presentation summary

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2. PRESENTATION OF ROBATEL INDUSTRIES
3. OUR FIELDS OF EXPERTISE
4. ARIEL PROJECT
5. PROGRESS OF THE AHCF PROJECT
6. DESIGN OF THE AHCF:
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   - EXTERNAL EQUIPMENT
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Presentation: ROBATEL Industries

Set up in 1830
In the nuclear field since 1953

130 employees
Turnover > 20 M€

ROBATEL technologies in USA
Fields of expertise

GLOVEBOX SYSTEMS

SHIELD DOORS & HATCHES

HOT CELLS

DOCKING SYSTEMS

NUCLEAR WASTE MANAGEMENT SYSTEMS
Our fields of expertise

TRANSFER CASKS & SHIELDED BELLS
DECOMMISSIONING SCENARIOS

LIFTING & HANDLING EQUIPMENT
TRANSPORTATION & STORAGE CASKS
NEUTRON & GAMMA RADIATION SHIELDING
ARIEL I
Accelerating Science and Innovation for Canada
Design of a hot cell facility for used target management:

Planning

- Project start: 05.2017
- Design phase: 02.2018
- Design final approval by TRIUMF: 07.2019
- Design final approval by BC Engineer: 08.2019
- Fabrication phase: 09.2019
- On site assembly phase: 03.2020
Purposes of the ARIEL Hot Cell Facility (AHCF):

- repair and maintenance of their ancillary service modules
- handling and disposal of radioactive waste produced by ARIEL

Handling of the radioactive target assemblies used in ARIEL (25 Tons)
General design & constraints of the ARIEL Hot Cell Facility (AHCF)

**Lead walls:**
- Thickness 230 mm

**Carbon steel roof:**
- Thickness 320 mm

**Design constraints:**

- **Weight constraint** of 25 tons on the roof
- **Seismic resistance**
- **Adaptability** with the future cell 2
- **Shielding** for a maximum dose rate of 2.8 Sv/h at 1m
External equipment of the ARIEL Hot Cell Facility (AHCF)

- Turntables
- Internal camera monitors
- Operators platform
- Electrical access
- Viewing windows
External equipment of the ARIEL Hot Cell Facility (AHCF)

- East turntables to introduce the target module
- North Material access
- Exit ventilation
- East Material access
- Waste transfer door
- Target access hatch
- West turntables to introduce the target module
- Inlet ventilation
- Electrical access
- Material and man access
Internal equipment of the ARIEL Hot Cell Facility (AHCF)

- Monorail
- Overhead crane
- Stainless steel liner
- Work surface
- Lift table
Conclusions

ROBATEL Industries has over 50 years of expertise with hot cell design and manufacturing

ROBATEL Industries is competent for:

- Containment boxes and liners
- Gamma radiation shielding (Lead, steel, concrete)
- Neutron shielding (proprietary materials)
- Shielded and leak tight docking systems
- Access hatches
- Ergonomics / Human factor studies
- Inert gas Hot cells & gloveboxes
- Seismic calculation

All of the ARIEL design criteria has been successfully answered to provided an efficient, safe and reliable hot cell for supporting this challenging project
Thank you for your attention!

Capitalizing on the long term

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