

# Activated Waste Reduction and Design for Remote Maintenance

*Friday, 23 May 2014 09:40 (30 minutes)*

The Facility for Rare Isotope Beams (FRIB) is a new national user facility for nuclear science, funded by the Department of Energy Office of Science (DOE-SC) Office of Nuclear Physics and operated by Michigan State University (MSU), East Lansing, USA. FRIB will provide intense beams of rare isotopes that are produced by the interaction between a heavy ion beam and a rotating carbon target. The heavy ion beam power will be 400 kW at 200 MeV/u. The interaction between the ion beam and target will produce high energy secondary radiation that cause the beam line components to become highly activated. These components when repaired or replaced generate a waste stream of activated materials that must be properly managed.

Reduction of the waste stream is a design focus for the FRIB beam dump and target. Reduction by design makes economic sense when the estimated cost of a waste shipment can exceed \$ 300K. It also makes operational sense as waste cask availability may be limited and the availability of a waste disposal site is not guaranteed. Reducing the waste stream however adds complexity to the design and complicates the remote maintenance procedures. In this talk, we will discuss how the FRIB target and beam dump designs have evolved to minimize the activated waste stream consistent with remote maintainability.

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## Summary

The talk will discuss the FRIB experience with regards to tradeoffs between reduction of an activated waste stream with design complexity and ease of remote handling.

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