

Modular target construction at TRIUMF-ISAC

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In design of the TRIUMF-ISAC radioactive ion beam facility, large physical dimensions were allowed for the target-ion-source and beam transport optics. Close proximity of ion beam components was also critical to efficient beam transport. Previously at TRIUMF tall smokestack style proton beam devices, having Fe shielded plugs with target assemblies situated at the bottom, were used successfully for over thirty years. Safe transport of irradiated targets was accomplished in tall, shielded flasks by overhead crane. Remote handling was limited to an independent hoist mechanism onboard the flask, operated by remote pendant. Transferring earlier target handling procedures to the larger and more complex RIB components required significant evolution of our handling concepts. Any suitable transport flask envisioned proved unmanageable in size and massive in shielded weight. Instead the philosophy of a fully remote crane operating within a suitably concrete shielded target hall was adopted to handle the larger modular components. Shielding above the beam elevation was provided to attenuate radiation levels adequate to permit the use of organic seals and insulation materials during beam operation and to allow personnel hands-on access for services connections with beam-off. These individual modules are situated in a T-shaped, five chambered common vacuum vessel. Each Module provides its own operational services along with dual, isolated vacuum regions for contamination control.

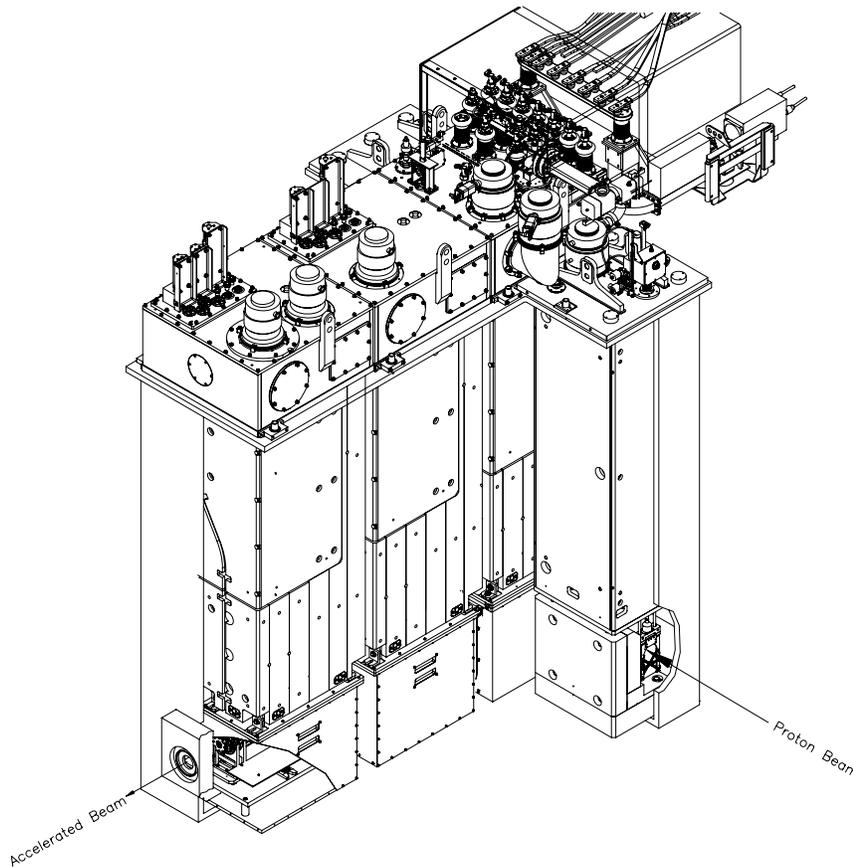


Figure 1: *ISAC East Target Station*