

Preliminary design study of the integration and remote handling processes for the Beam Dump Facility Target Complex

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CERN has launched a work programme to evaluate the feasibility of a new facility for fixed target physics and dark matter searches (the “Beam Dump Facility”, BDF). In the proposed facility, a production target/dump, will be capable of absorbing the entire energy of the beam extracted from the Super Proton Synchrotron. The target will produce weakly interacting particles for investigation by a suite of particle detectors downstream of the target complex.

High levels of radiation (both prompt and residual) will be produced: the total cumulated dose foreseen near the target is around 500 MGy/year. The target will be underground and all handling operations on the target and surrounding equipment will be carried out remotely. The target complex will house the target and its services; a new extraction tunnel and an experimental complex will complete the BDF.

Conceptual design work on the target complex had previously been carried out at CERN in support of a technical proposal to obtain funding for the current BDF study phase.

The first goal of the preliminary design study covered by this presentation was to demonstrate the feasibility of the construction, operation, maintenance of the BDF target complex. The second goal of the study was to produce integration-level designs of the target complex to allow development of civil engineering designs and further design of technical services by other specialist teams as part of the work to evaluate the feasibility and estimated cost of the BDF facility.

The study has been conducted with the support of an external remote handling design company working in close collaboration with CERN. After briefly introducing the BDF, the presentation outlines organisation of the study then describes the resulting target complex designs. Further work, currently underway, to complete the integration design for the CDR is introduced.

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