BDF Target Systems Advisory Committee (BTSAC)

PURPOSE AND SCOPE

- The High-Intensity ECN3 (HI-ECN3) Project has been set up to design and build a high-energy, high-intensity Beam Dump Facility (BDF) to carry out research into feebly interacting particles at the SPS in conjunction with the Search for Hidden Particles (SHiP) experiment. The Project was endorsed by CERN management in March 2024, and it is planned to deliver its Technical Design Report (TDR) in 2026, aiming for beam on target in 2031. The target facility includes a 350-kW high-Z production target, its target station and its supporting infrastructure.
- The BDF Target Systems Advisory Committee (BDF-TSAC) is formed to provide independent advice to the HI-ECN3 Project team and specifically to the BDF Target Systems team working in Work Packages 3 & 4, on matters associated with successfully achieving project goals, based on the most recent knowledge, state-of-the-art and experience worldwide. This advice will be formalized mainly via a framework of meetings during the Project.
- Target Systems within the scope of the BDF-TSAC includes the production target assembly itself as well as the target station with its shielding, confinement, radiation levels, cooling, ventilation and handling systems. In particular, the BDF-TSAC should cover aspects such as concept validation, equipment production, assembly, target & target station instrumentation and monitoring, and include maintenance operations, failure modes and associated recovery methods and waste packaging capabilities. Target Systems include also the definition of the processes in the service building and the handling of highly radioactive components for maintenance and waste packaging.
- The BDF-TSAC is not a review committee. A key aim in setting up this committee early in the life of the project is to ensure the committee members develop an in-depth knowledge of the project and to ensure continuity of advice given by the committee to the project team throughout the design and construction phases of the project.
- Formal reviews of the BDF Target Systems will be organised by the HI-ECN3 Project Management at key phases of the project and will be done under a separate initiative to the BDF-TSAC.
- The project phases within the scope of the BDF-TSAC includes the design, manufacture, assembly, operation, and safety analysis of the BDF Target Systems.

COMMITTEE CHARGE AND RESPONSIBILITIES

- The BDF-TSAC will report to the HI-ECN3 Project Leader and SY/STI Management and will provide advice to the Work Package Leaders in charge of the BDF Target Systems.
- A specific charge to the committee, related to the present status of the project, will be provided by CERN to the BDF-TSAC members prior to each BDF-TSAC meeting. The BDF-TSAC is expected to provide findings, comments and actionable recommendations based on elements mentioned in the charge and comment on the outputs from recommended actions in previous meetings.

Relevant information about the HI-ECN3 project outside the scope of the BDF-TSAC will also be provided, to provide the members with appropriate background information.

- The BDF-TSAC is expected to provide feedback and suggestions on facility design developments that may improve operability, sustainability as well as potential operational cost reduction. This should include return of experience of design, construction, operation and decommissioning of high-power targets and associated and relevant systems.
- If needed by specific items on the agenda, as well as incorporating the input of the BDF-TSAC members, CERN may invite additional experts to participate.

COMMITEE MEMBERSHIP

- The BDF-TSAC will be constituted by internationally recognized experts in the area relevant to the HI-ECN3 Target Systems. The BDF-TSAC will be comprised of approximately 6 members including a chairperson. The committee members are to provide detailed comments and recommendations within their area of expertise and will work with the BDF-TSAC chairperson to provide clear and actionable recommendations to the project team.

MEETINGS

- The BDF-TSAC will meet face-to-face once per year at CERN.
- Special meetings focused on specific topics may be held on an ad hoc basis with the BDF-TSAC, or a subset of the committee, to address urgent or emerging issues. Appropriate CERN representatives will organize these meetings and will work with the BDF-TSAC Chairperson to develop the charge elements and agenda for each meeting with support from the respective WP leaders.

REPORTING

- At the close of each BDF-TSAC meeting, the chairperson is expected to provide a close-out briefing with comments and recommendations. Within two weeks of the meeting, a detailed report will be provided to the HI-ECN3 Project Leader and SY/STI Management.

TERM

- The usual term for BDF-TSAC members will be three years, but can be extended, especially in the early years, to provide a staggered rollover of membership.
- It is expected that the BDF-TSAC will accompany the project until the facility starts up and is commissioned.