Workload foreseen for the IFMIF Post Irradiation Examination Facilities

J.Molla[1], M.Yamamoto[2], A.Polato[3], M.Soldaini[4], H.Takeuchi[2], E.Wakai[5]

[1] *EURATOM-CIEMAT Association, IFMIF/EVEDA Project Team, Rokkasho, Japan*

[2] *JAEA, IFMIF/EVEDA Project Team, Rokkasho, Japan*

[3] *INFN, IFMIF/EVEDA Project Team, Rokkasho, Japan*

[4] *CEA, IFMIF/EVEDA Project Team, Rokkasho, Japan*

[5] *JAEA, Fusion Research and Development Directorate, Tokai-mura, Japan*

Corresponding author: joaquin.molla@ifmif.org

ITER and Broader Approach Agreement between EURATOM and Japan (BA) are today the two main projects of the fusion program which strongly linked each other have the common objective of providing the information required for the design and construction of DEMO reactors. These three major projects (ITER, BA agreement and DEMO) define nowadays the international fusion roadmap aiming to the achievement of fusion energy within a period of about 30-40 years. The main result of IFMIF (International Fusion Materials Irradiation Facility) which is one of the three BA projects will be an important database providing essential information on materials behavior under DEMO-relevant irradiation conditions. The Post Irradiation Examination (PIE) Facilities in IFMIF will play a crucial role in the creation of this database by measuring critical properties in the irradiated materials. Operation of IFMIF in general and PIE Facilities in particular will be therefore driven by the architecture of such database and the overall schedule of the international fusion roadmap.

The work program for IFMIF in terms of irradiation schedule and required examination for the candidate materials for DEMO reactors is urgently needed as the main input for the engineering process that will lead to the engineering design of the PIE Facilities, one of the main goals of the IFMIF-EVEDA (Engineering Validation and Engineering Design Activity) project The demanded workload for the PIE Facilities during the operation of IFMIF is assessed in this paper. The foreseen work program presented in this paper is based on the IFMIF specifications proposed by IFMIF users' community, available irradiation volumes in the test modules and materials properties required for building the materials database needed for design of DEMO reactors. Candidate materials to be tested, number of specimens, temperature range or radiation damage range are the main parameters used for this assessment. The main assumptions made to draw a realistic scenario for the irradiation campaigns and post irradiation experiments are also described in this paper.