Detailed Design of ITER Plasma Diagnostics Systems by Japanese Procurement

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1. Micro Fission Chamber (MFC)

In-vessel components of the MFC system, except MFC detector, were reviewed in the preliminary design review (PDR) and approved in the last year. Since the feed-through forms the vacuum boundary, the feed-through must comply with the SIC (Safety Important Component). In the final design phase, manufacturability and installation of the feed-through and Radiographic Testing (RT) of the welding must be demonstrated. A mock-up of the feed-through and a dummy feed-out was made.

Fig. 1. RT of welding part of the Feedthrough

2. Detailed design of the PA2 Diagnostics

PDR of the diagnostic systems under the second procurement arrangement (PA2), such as the edge Thomson scattering measurement (ETS), Poloidal Polarimeter (PoPola), Infrared Thermography (IRTh) and Divertor Impurity Monitor (DIM) are scheduled in 2015–2016. Preliminary design of PoPola is completed and its preliminary design review (PDR) is scheduled in this November. The preliminary design shows engineering sound design in the ITER environment and compliance with applicable codes and standards for ITER and several French orders related to nuclear facility, while the required accuracy of the measurement is satisfied (see Fig. 2). The preliminary design of ETS is being matured and the PDR is scheduled in the next February.

Fig. 2. q-profile measurement by PoPola system