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DIVERTOR THOMSON SCATTERING FOR ITER (STATUS) ^{*)}

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In 2023, we carried out work to prepare the first, second and third stages of the final design review (FDR-1, FDR-2 and FDR-2) of divertor Thomson scattering (DTS). Preparation of FDR-1 has reached the final stage and the prepared set of documentation was uploaded to IDM at the end of 2023. The subject of the FDR-1 DTS is a set of diagnostic components located on divertor cassettes 21 and 22 of the lower port No. 8 including: a passive protection system for the laser radiation launcher - a gas-dynamic protection system; lower and upper blends for shielding the collection solid angle from blackbody radiation of the heated surface of the internal divertor target; laser dump on cassette #21.

In particular, the design of the laser dump, providing ten reflections of laser radiation from molybdenum mirrors with a gradual weakening of the laser radiation power density, was developed taking into account the requirements of the cassette installation process, providing access when welding the trap to the cassette and ensuring the requirements for temperature decoupling of molybdenum mirrors relative to steel housings inside the trap itself. Particular attention was paid to the thermal interface between all the diagnostic components and the cassette body, as well as unloading of welded joints. For the developed structures, a full set of ANSYS analyzes was carried out, taking into account all possible combinations of loads for the normal operating mode of the tokamak, as well as for the mode taking into account possible incidents during operation.

The development of work on the preparation of FDR-2 consisted of continuing work on the design of intra-vacuum mirrors and protecting / cleaning the first mirror from deposition.

As part of the preparation of FDR-3, a number of CODAC system documents were developed.

^{*)} [abstracts of this report in Russian](#)