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## FINAL DESIGN OF THE SUPPORTING FRAMES OF THE ITER UPPER DIAGNOSTIC PORTS 02 AND 08 <sup>\*)</sup>

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During 2024, great progress was made in the development of final designs of devices for placing diagnostic equipment in the upper ports №02 and №08 of the ITER. Diagnostic port are components of the world's largest thermonuclear reactor, which has no analogues, which is currently under construction; therefore, they will be a unique development, created for the first time for harsh operating conditions.

Ex-vessel vacuum support frames in the ITER diagnostic ports are the main structures that ensures the delivery and retention of diagnostics in the port chamber of the installation. The interspace support frame provides fastening of the front part of the diagnostics directly near the vacuum chamber and is responsible for the accuracy of positioning of the diagnostics relative to the windows of the vacuum vessel. On the other hand, on the interspace support frame consist a biological shielding that reduces the SDDR in the port chamber to the required level. The port cell support frame is installed independently of the interspace support frame and ensures the accuracy of their relative positioning. The port cell support frame has to support the diagnostic recording equipment with radiation protection that ensures that the radiation level is reduced to the level required for stable operation of electronic equipment.

During the 2024 development phase, the following work was completed:

- 3D models of support frames in the interspace and support frames in the port cell for the upper ports №02 and №08 have been improved;
- a neutron calculations were carried out to estimate the SDDR;
- a calculation of stresses arising in the structure under the influence of mechanical and seismic loads was carried out;
- a package of documents was prepared to protect the final design of the support frame structures.

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<sup>\*)</sup> [abstracts of this report in Russian](#)