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**STATUS OF WORK ON INTEGRATION OF LOWER PORT № 08, UPPER PORTS №№. 04-06 OF ITER <sup>\*)</sup>**

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The tasks of integrating the equipment of the ITER diagnostic ports include ensuring the placement, operation and maintenance of diagnostic systems, ensuring neutron protection and structural integrity of supporting structures, ensuring the tightness of vacuum equipment and resistance to thermal, seismic and electromagnetic loads. The lower port № 08 is located in the divertor area; load-bearing structures for diagnostics must meet the requirements for servicing divertor cassettes with a manipulator through the use of transportation and fixation devices for structures. The upper ports № 04-06 of the ITER do not contain complex diagnostic systems and are intended for the installation of protective modules for neutron protection; integration tasks also include working out the connection of utility lines.

The main supporting structures have been developed to accommodate diagnostic equipment for Thomson scattering and a divertor erosion monitor, as well as elements for transportation, installation and fixation in Nizhny Port No. 08. Taking into account the need to take into account the requirements of optical diagnostics for installation and accuracy of adjustments, a bench base was developed and assembled for prototyping the course of diagnostic laser radiation on optical stands at the integration site.

In 2023, for the tasks of integrating the lower ports № 08, mock-ups of structural elements for fixing the front diagnostic rack were developed, and tests of the mock-up of the front diagnostic frame were carried out to confirm technical solutions for transportation and fixation on divertor rails. Documentation has been prepared for passing the technical design defense (FDR). It is planned to test the fixation and transportation elements under thermal loads in accordance with the operating conditions on the ITER.

As part of the work on integrating the upper ports, the structural elements of protective modules and utility connection interfaces were worked out, confirmed by calculations of seismic, thermal and electromagnetic loads, as well as the effects of neutron radiation. The final design review for the No. 04-06 Upper ports of the ITER took place. It is planned to analyze the manufacturability of the design solutions used and develop documentation for pre-production

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