Preliminary design of UP#02 and UP#08 INTEGRATION [[1]](#footnote-1)\*)

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The goal of the integration project is development of the devices for placing the diagnostic equipment in the upper ports #02 and #08 of ITER tokamak. Diagnostic port plugs are the part of the world's largest future tokamak, which has no analogues; they will become a unique development, first created for the hard operating conditions of ITER.

Over the past period, the next stage of the preliminary design of devices for placing equipment in the ports #02 and #08 was completed. During the stage, three-dimensional models of port plugs were improved, including diagnostic first walls (DFW), diagnostic shielding modules (DSM), and housing. Refinement of port plugs models was mainly aimed at standardization the design of the upper ports. Support structures for equipment placement in the interspace and port cell were modernized in accordance with new versions of equipment models and current ITER requirements for the width of corridors in the interspace and port cell.

In preparation for the defence of preliminary projects of the upper ports #02 and #08, sets of design documentation were prepared, in particular, plans for the delivery, assembly and maintenance of ports were written, load specifications were compiled based on the results of thermal, thermohydraulic, electromagnetic, seismic and mechanical calculations.

As a result of the next stage of neutron calculations, the distribution of neutron heating of the port structure was obtained, the neutron fluxes in the zones of the port plug, interspace and port cell were calculated. One of the key results is the calculated shutdown dose rate in the working areas of the interspace and port cell. The calculation modeling of thermal, thermohydraulic, electromagnetic, seismic and mechanical loads on the structural elements of the diagnostic ports prove the reliability of the current version of the design.

The results of the work contribute to solving the most complex scientific and technical problems associated with the creation of diagnostic ports operating in extreme conditions of the ITER fusion reactor.

1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVII/E/ru/JD-Listopad.docx) [↑](#footnote-ref-1)