Progress of the integration of the Vertical Neutron Camera [[1]](#footnote-1)\*)

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The Vertical Neutron Camera (VNC) for the ITER will consist of two parts (upper and lower), each of them will contain six detector units combined into hermetic diagnostic modules equipped with a service vacuum system and water cooling system. The upper VNC will be installed in the upper port (UP) №18 and should be part of the DSM of this port, the lower VNC will be installed in the lower port (LP) №14.

During the development of the design and integration of this diagnostic, the following main changes and results of work were made:

- To ensure the best results of the system, the detectors should be placed at the greatest possible distance from the plasma, a number of improvements have been made for this. Due to changes inside the upper port №18, it became possible to place the detectors at a greater distance from the plasma, since abandonment of the water cooling system of the detectors. The switching unit of the detector blocks was redesigned, as a result it was possible to design the wiring of the switching cables more compactly, which would also allow the detector to be separated from the plasma.

- Concerning changes in the detector unit in the UVNC, the protection around diagnostic and Diagnostic Shielding Module (DSM) itself was redesigned. The overall dimensions of the UVNC diagnostic have been significantly reduced, a modular electrical connector has been installed that provides an electrical connection between the UVNC diagnostics and the DSM.

- The contracting organization developed the neutron protection assembly technology for a cabinet with electronics located in the port cell of LP#14, and produced an experimental batch of protection elements with a demonstration of the results of the protection assembly.

- In 2019, a full package of drawings was prepared for the production of a mock-up of the updated detector unit.

- The contracting organization prepared the thermohydraulic, seismic and electromagnetic analyzes of the LVNC.

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