THE STATUS OF the DIAGNOSTIC SYSTEM DIVERSOR NEUTRON FLUX MONITOR for ITER

Obodovsky S.Yu., Vorob'ev V.A., Batunin A.V., Kovalev A.O., Portnov D.V., Kashchuk Yu.A.

Project center ITER, Moscow, Russia, [s.obudovsky@iterrf.ru](mailto:s.obudovsky@iterrf.ru)

As part of the Russian contribution to the ITER project, the institution Project center ITER is developing a Divertor Neutron Flux Monitor (DNFM) diagnostic system. This system is designed to measure the dynamics of the total neutron yield and thermonuclear power. Diagnostics consists of three detector modules arranged inside a vacuum chamber of a tokamak-reactor. 6 ionization fission chambers of different sensitivity will be installed in each detector module. Compatibility with the vacuum system of the installation involves the use of SVS (service vacuum system) to control the tightness of gas-filled neutron detectors placed inside the vacuum chamber of the tokamak. Analysis of the divertor cassette showed that it is not possible to provide SVS service when placing the DNFM diagnosis on the body of the divertor under the house. In this regard, it was decided to transfer the DNFM detector module to the wall of the ITER vacuum chamber under the divertor cassette.

This paper presents the current status of the DNFM diagnostic project. The new design is shown and the results of neutron analysis for the detector module in the new location are presented. It is shown that the change in FC sensitivity will ensure the implementation of design requirements, including in-situ calibration of neutron diagnostics of ITER.

Analysis of the thermal state of the detector module DNFM showed that in the new place there is no need for forced cooling.

The results will be used to defend the final diagnostic project in the ITER IO.

The work was carried out within the framework of the state contract №N. 4A.241.19.18.1027 of 19 April 2018