progress of ITER equatorial port #11 production [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2023.50.2023.1.1.261

3Kravtsov D.E., 1,2Burdakov A.V., 1Ivantsivsky M.V., 4Buslakov I.V., 1Sharafeeva S.R., 1Seleznev P.A., 1Ryzhankov I.S., 1Noryshev E.A., 4Lobachev A.M., 1,2,5Shoshin A.A., 4Loginov I.N., 1Sulyaev Yu.S., 1Shabunin E.V., 1Gavrilenko D.E., 4Shagniev O.B., 1Shiyankov S.V., 4Pozhilov A.A., 4Kirienko I.D., 4Modestov V.S.

1Budker Institute of Nuclear PhysicsSB RAS, Novosibirsk, Russian Federation,
 Yu.S.Sulyaev@inp.nsk.su
2Novosibirsk State Technical University, Novosibirsk, Russian Federation
3Institution of RosAtom “Project center ITER”, Moscow, Russian Federation
4Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation
5Novosibirsk State University, Novosibirsk, Russian Federation

Over the past year, the next stage of manufacturing the delivery components of the equatorial port (EP) No. 11 of the ITER tokamak was completed. In particular, deep drilling of cooling channels in the housing of the diagnostic protection module (DSM) # 2 was performed in accordance with the technologies and control methods developed at the INP. The engineering calculations carried out confirm the parameters of the temperature fields of the DSM assembly specified in the technical specifications, as well as their mechanical strength for the most difficult ITER operation scenarios.

At the INP workshop, an international certification of the procedure for manual welding of typical for the production of ITER port-plug components was carried out, as well as certification of welders in accordance with the requirements of the EN ISO 15614 series. A specialized installation for robotic welding was put into operation. Trained INP specialists successfully completed the set of welds, typical for ITER delivery products. This installation is prepared for the qualification and certification procedure.

At the BINP integration site for the final assembly of ITER delivery products, a prototype of the subsystem for ultrasonic testing of the DSM was installed to precisely move the UT sensor with an automatic supply of the contact liquid. This device is designed to automate the positioning of the scanning UT head on the surface of the DZM for ultrasonic testing of welds.

The manufacture of neutron shielding components using ceramic blocks from sintered boron carbide continues. The production of ceramics must comply with the ITER Organization approved ITER\_D\_457TBH specification and ITER\_D\_X2GWTZ drawings. Vacuum and strength tests of ceramic blocks confirm the possibility of their use inside the ITER vacuum chamber.

The report discusses the preparation of the production facilities of the INP SB RAS for the manufacture and assembly of equipment for the placement of diagnostic systems in accordance with the rules and requirements of the French code RCC-MR 2007. In particular, the process of qualification of special production processes used in the process of manufacturing vacuum products for ITER, classified as part of a nuclear power facility.

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