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NEW BASELINE OF THE ITER PROJECT ^{*)}

Kirnev G.S., Krasilnikov A.V.

Institution "Project center ITER", Moscow, Russia, g.kirnev@iterrf.ru

The baseline of the ITER project is a plan for the manufacture of equipment, its assembly and integrated commission acceptance at the ITER site, as well as the operation of the tokamak and auxiliary systems. The plan includes the schedule for the tokamak assembly, scope of work, as well as the cost of assembly and operation of the tokamak at the ITER site.

In 2022, it became obvious that the current baseline, adopted by the ITER Council in 2016, could not be implemented for a number of reasons:

- baseline 2016 was not sufficiently reliable and realistic from a technical point of view; it was based on the "fastest technically achievable" schedule. However, the deadlines for many activities on the manufacture, assembly and installation of components were practically impossible even in the absence of contingencies;

- the tokamak assembly schedule was calculated based on the experience of existing tokamaks. However, the size and weight of the ITER tokamak is almost an order of magnitude greater than that of the largest existing tokamaks in the world. It is impossible to predict extrapolation based on such a large technical gap;

- objective unavoidable delays in the implementation of the ITER Project, namely, delays due to the Covid-19 pandemic and the consequences of non-compliance with quality control requirements (acceptance and delivery of components that do not meet the specified requirements to the ITER site).

The ITER Organization, in collaboration with national agencies, has developed a new baseline, 2024. The new baseline is the result of significant efforts of the ITER Organization and national agencies to prepare a viable path for the project success. It has been developed taking into account the following criteria:

- feasibility from a technical and scientific point of view while reducing the risks of achieving the final goals of the project;

- phased demonstration of nuclear safety and licensing;

- full consistency of the delivery and assembly schedules of components;

- cancellation of the previous "First Plasma" phase, which was not of great importance, and the transfer of the first phase to a scientifically and technically significant research phase by changing the assembly sequence of the machine;

- optimization of systems; replacement of the coating material of the first wall from beryllium to tungsten and an increase in plasma heating power.

The new baseline assumes five key event-oriented stages to achieve the goals of the ITER project in the field of thermonuclear energy: demonstration of 500 MW thermonuclear power with a fusion energy gain ($Q \geq 10$) for a duration of 300-500 s, as well as obtaining and maintaining long-term pulsed and stationary non-inductive scenarios with $Q \geq 5$ with a duration 1000 s and 3000 s, respectively.

The report will provide a description of all 5 stages of the new baseline with information on the construction schedule, the scope of work and the cost of assembly and operation of the tokamak.

Information will also be provided on the impact of the new baseline on the obligations of the Russian Federation in the ITER project.

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^{*)} [abstracts of this report in Russian](#)