

ITER Operating Limits and Conditions (P3-J-473)

Sergio Ciattaglia(1), Pietro Barabaschi(2), Jose Antonio Carretero(3), Stefano Chiochio(4), Daniel Hureau(5), Jean Philippe Girard(6), Charles Gordon(4), Alfredo Portone(1), Lina Rodriguez Rodrigo(7), C. Roldan(8), Gabriela Saibene(2), Joelle Elbez Uzan(9)

1. EFDA CSU-Garching Boltzmannstr. 2 D-85748 Garching bei München Germany
2. EFDA Close Support Unit Boltzmannstr. 2 85748 Garching Germany
3. IBERTEF Magallanes 22 28015 Madrid Spain
4. ITER Garching Joint Work Site, Max-Planck-Institut für Plasmaphysik Boltzmannstrasse 2 D-85748 Garching Germany
5. AREVA NP SAS - Process Division 10 rue Juliette récamier 69456 Lyon Cedex 06 France
6. ITER Cadarache Joint Work Site CEA Cadarache 13108 St. Paul lez Durance France
7. EFDA-CSU-Barcelona c/ Josep Pla. 2, Torres Diagonal Litoral Building B3 08019 Barcelona Spain
8. CIEMAT- Fusion Nat. Lab Avda Complutense 22 28040 MADRID SPAIN
9. Agence ITER France Cadarache F-13108 St Paul Lez Durance France

The Operating Limits and Conditions (OLCs) are operating parameters and conditions, chosen among all system/components, which together define the domain of the safe operation of ITER in all foreseen ITER status (operation, maintenance, commissioning). At the same time they are selected to guarantee the required operation flexibility which is a critical factor for the success of an experimental machine such as ITER.

System and components important for personnel or public safety (Safety Important Class, SIC) are identified from the overall plant safety analysis on functional importance to safety of the components. SIC classification has to be presented already inside the preliminary safety analysis report and approved by the licensing safety authority before the relevant construction.

OLCs comprise the safety limits, i.e. that if exceeded could result in a potential safety hazard, the relevant settings that determine the intervention of SIC systems and the operational limits on equipment which warn from or stop a functional departure from a planned operational status that could challenge equipment and functions.

The safety limits have to indicate clearly states that leave the nominal safety state of ITER; they are derived from the safety analysis of ITER.

OLCs can represent in some cases few parameters grouping together. Some operational conditions, e.g. inventories, will be controlled through no real time measurements and procedures.

Operating experience from present tokamaks, in particular JET, and from nuclear plants is considered at the maximum possible extent. This paper presents the guidelines to develop the ITER OLCs with particular reference to safety limits. A few examples are reported as well as open issues on some OLCs control and measurement and the relevant R&D planned to solve the issues.