**IOS-1.2** Divertor heat flux reduction in ITER baseline scenario

|  |  |  |  |
| --- | --- | --- | --- |
| **TG priority:** Moderate | **Start date:** 2013 | **Status:**  On-going | **Personnel exchange:**  Yes |
| **IO priority:** | **End date:** 2015 | **Motivation:** Plasma Operations | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Device /**  **Association** | **Contact**  **Persons** | **2016 TG Request** | **Activity (from JEX/JA spreadsheet)** | | | |
| **2012** | **2013** | **2014** | **2015** |
| AUG | A. Kallenbach | Essential | Committed | Committed | Committed | Committed |
| DIII-D | T. Petrie T. Luce | Essential | Considering | Considering | Analysis | Considering |
| JET | E. Joffrin  C. Giroud | Essential | Committed | Committed | Committed | Committed |
| C-Mod | ? | Essential | Committed | Analysis | Analysis | Committed |

**Purpose**

The development of seeded scenarios for the ITER baseline (q95~3, fGW~0.85, N~1.8) is of crucial importance for ITER. Present day tokamaks cannot work as ITER simultaneously close to PLH and at ITER relevant P/R values. Therefore, seeding experiments should concentrate on the characterization of the operational space varying Pheat from PLH to the highest possible values. Different seeding gasses should be used in the study (nitrogen, neon, argon). The impact of seeding on core performance should be assessed when Prad/Pheat>50% and quantifying whether that depends on how much of the radiation is in the core or divertor. Document in these conditions the reduction of “between-ELM" heat flux to the divertor targets. Development of feedback control of the radiation is highly desirable.

**Results for 2015**

* C-Mod has new experiments with Ne and N2 seeding. For N2 seeding, introduction in the private flux region is better (consistent with 2014 DIII-D results). Results in Ne were not as good.
* AUG, DIII-D, and JET had no new experiments

**Plans for 2016**

* One deliverable should be the correlation of radiative fraction with pedestal parameters, core dilution, and heat flux mitigation.
* Main experiments should be at q95=3 with fGW up to 0.85 (ITER baseline).
* Experiments are proposed at JET, AUG and DIII-D, to document the operational space at q95~3.