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FTP/P1-29: Overview on CEA Contributions to the Broader Approach Projects

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France is participating to the joint Europe-Japan so-called "Broader Approach Activities" in support of ITER and DEMO activities, consisting in 3 projects: The Engineering Design and Validation of a 14 MeV neutrons irradiation facility (IFMIF/EVEDA), the building of an International Fusion Research Center (IFERC) and the ITER Satellite Tokamak Programme (STP -JT-60SA).

For IFMIF/EVEDA activities, CEA is in charge of the high intensity Injector, the first part of the Superconducting RF Linac, the Cryoplant, the Accelerator Control System, the delivery of specific Beam Diagnostics and RF power tubes. This activity covers the fabrication of the systems, test of most critical components, installation and commissioning at the Japanese site.

For IFERC, in 2011, CEA contracted with Bull the procurement of the "Helios" computer which reached a performance of 1.5 Petaflop/s peak, making it, with its 70000 compute cores, the largest supercomputer dedicated to a single scientific community. It is complemented by large high bandwidth storage, pre/post processing, visualization systems and services for 5 years. The work started in Sept. 2007. In Jan. 2012, first users started to work. Helios was inaugurated in March 2012.

For JT-60SA tokamak, CEA is responsible for providing the Cryoplant System (CS), 9 of the 18 Toroidal Field Coils and supporting structures, the TF Coils Test Facility (CTF) and cold tests, and 5 Magnet Power Supplies (MPS). CEA is also participating to the JT-60SA Research Plan update. TF coil activities started in 2007; a manufacturing contract was placed to Alstom in July 2011. The last coil will be delivered to Japan in late 2016. Prior shipment, coils will be tested in the CTF at CEA-Saclay. The CS was optimized to smooth the transient heat loads during plasma operation. For CS and MPS contract are expected to be placed in June and Dec. 2012 respectively.

This paper gives an overview of present status of these projects since 2007.

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