Contribution ID: **36** Type: **Poster**

Recent Progress on the Production and Testing of the ITER Central Solenoid Modules

Tuesday 23 October 2018 08:30 (20 minutes)

Several key milestones have been completed recently in the fabrication of the Central Solenoid (CS) modules for ITER. The qualification coil has been completed and tested with many lessons learned that have now been incorporated into the processing of the production modules. Currently four modules are in production with the first module scheduled for completion in 2018 followed by full current testing at 4.5K. Shipment of the first module to Cadarache is scheduled for 2019, arriving in advance of its need date.
The Central Solenoid is a key component of the ITER tokamak providing the inductive voltage to initiate and sustain the plasma current and to position and shape the plasma. The design of the CS has been a collaborative effort between the US ITER Project Office (USIPO), the international ITER Organization (IO) and General Atomics (GA). GA is fabricating seven 110 tonne CS modules (one is a spare). After arrival at the ITER site, the six modules will be stacked in the Assembly Hall, the structure added and transferred in a single lift to the ITER tokamak.
In a dedicated facility in Poway, California, USA, GA is currently fabricating the modules, with each one requiring approximately 22 months start to finish. Following fabrication a series of tests including high voltage testing of the insulation, full current testing of the conductor at 4.5K and a repeat of the high voltage tests at room temperature are performed. The testing duration is an additional five months for each module and is the program critical path.
Recently, the qualification coil was completed, electrically tested, and cooled to 4.5K by supercritical helium. While at 4.5K, a series of tests were performed which simulated those tests that will be performed on the modules to validate the test methods and equipment. After the tests were completed, the mockup coil was dissected to determine the quality of the resin injection.
This paper describes some of the challenges in accomplishing the recent milestones in completing the qualification coil fabrication and testing, the implications on the module production, and the status of the module production.

Country or International Organization

United States of America

Paper Number

FIP/P1-4

Author: Mr SMITH, John (General Atomics)

Co-authors: Mr STEPHENS, Alan (General Atomics); Mrs PRIDDIE, Donna (General Atomics); Mr SCHAUBEL, Kurt (General Atomics); Mr NORAUSKY, Nikolai (General Atomics)

Presenter: Mr SMITH, John (General Atomics)

Session Classification: P1 Posters

Track Classification: FIP - Fusion Engineering, Integration and Power Plant Design