

## UPGRADE OF THE DIII-D RF SYSTEM\*

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The DIII-D Advanced Tokamak Program requires the ability to modify the current density profile for extended time periods in order to achieve the improved plasma conditions now achieved with transient means. To support this requirement DIII-D has just completed a major addition to its ion cyclotron range of frequency (ICRF) systems. This upgrade project added two new fast wave current drive (FWCD) systems, with each system consisting of a 2 MW, 30 to 120 MHz transmitter, an all ceramic insulated transmission line, and water-cooled four-strap antenna. With this addition of 4 MW of FWCD power to the original 2 MW, 30 to 60 MHz capability, experiments can be performed with centrally localized non-inductive current drive. For off-axis current drive, we are implementing a 110 GHz electron cyclotron heating (ECH) system to DIII-D. Initially 3 MW of power will be available using two Varian gyrotrons and one Gycom gyrotron. Next we will increase the power to 6 MW and then to 10 MW with the new generation of internal mode converter gyrotrons.

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