

SYSTEM CONTROL AND DATA ACQUISITION OF THE TWO NEW FWCD RF SYSTEMS AT DIII-D*

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The Fast Wave Current Drive (FWCD) system at DIII-D has increased its available radio frequency (RF) power capabilities with the addition of two new high power transmitters along with their associated transmission line systems. A Sun Sparc-10 workstation, functioning as the FWCD operator console, is being used to control transmitter operating parameters and transmission line tuning parameters, along with acquiring data and making data available for integration into the DIII-D data acquisition system. Labview, a graphical user interface application, is used to manage and control the above processes. This paper will discuss the three primary branches of the FWCD computer control system: transmitter control, transmission line tuning control, and FWCD data acquisition. The main control program developed uses VXI, GPIB, CAMAC, Serial, and Ethernet protocols to blend the three branches together into one cohesive system. The control of the transmitters utilizes VXI technology to communicate with the transmitter's digital interface. A GPIB network allows for communication with various instruments and CAMAC crate controllers. CAMAC crates are located at each phase-shifter/stub-tuner station and are used to digitize transmission line parameters along with transmission line fault detection during RF transmission. The phase-shifter/stub-tuner stations are located through out the DIII-D facility and are controlled from the FWCD operator console via the workstation's Serial port. The Sun workstation has an Ethernet connection allowing for the utilization of the DIII-D data acquisition "Open System" architecture and of course providing communication with the rest of the world.

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