A Network Based Telemetry Upgrade for the DIII-D Neutral Beam Power Diagnostics

H.K. Chiu, V. Noraky, and R.-M. Hong

General Atomics, P.O. Box 85608, San Diego, California 92185-5608, henry.chiu@gat.com

Water flow calorimetry (WFC) is utilized at DIII-D to quantify injected neutral beam power. As part of the systems upgrades during the past year, the CAMAC based telemetry system for the WFC diagnostic was replaced by a network based telemetry system. The CAMAC based system relied on hardware triggers to operate. It was prone to component failure and difficult to obtain replacement CAMAC hardware. The architecture of the old CAMAC based system was vulnerable to noise pickup from the varying electric and magnetic fields of the DIII-D tokamak. The new system based on Ethernet protocols was designed with minimal noise sensitivity. The new system utilized a LabView™ programming environment on a PC based platform, and a dedicated data acquisition network. The new system was installed and tested during the startup phase of the 2006 physics campaign. Both the CAMAC based system and the new Ethernet based system were used to acquire data from one common beam source during the current year. The improvement in system performance will be presented.

Work supported by the U.S. Department of Energy under DE-FC02-04ER54698.