

SOFTWARE DEVELOPMENT ON THE DIII-D CONTROL AND DATA ACQUISITION COMPUTERS*

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The various software systems developed at DIII-D have played a highly visible and important role in tokamak operations and fusion research. The high reliance on inhouse developed applications encompassing virtually every aspect of operating the DIII-D tokamak, has required that much be given to the careful design, development and management of these software systems. Systems responsible for control of the tokamak hardware, neutral beam injection, plasma configuration and data acquisition continue to demand a high level of reliability to increase the efficiency of research during the limited number of operating days. These systems made up of a large number of codes have presented a wide variety of software design and development issues ranging from low level hardware communications, database management, and distributed process control, to man machine interfaces.

The focus of this paper will be to describe how software is developed and managed for the DIII-D control and data acquisition computers. It will include an overview and status of software systems implemented for tokamak control, neutral beam control, plasma configuration and data acquisition. The issues and challenges faced with developing and managing the large amounts of software in support of the dynamic and everchanging needs of the DIII-D experimental program will be addressed.

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