SYSTEMATIC CHARACTERIZATION OF COMPONENT FAILURES FOR THE DIII-D TOKAMAK*

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A fusion reactor will be a fairly complex system consisting of many components. Since all the components are required to work in order to produce a plasma and diagnose it, and since some of the components are large, and for economic reasons there will not be spares for all components, it is important to have a system whereby troubles are communicated, recorded and analyzed. Such a trouble report system has been in place at the DIII–D tokamak facility for many years. The purpose of the system is to easily facilitate communication between the people that discovers a problem and those that have to fix the problem. The trouble sheets are logged into a computer database, which is used to characterize the kind of problems that the facility experiences, and which equipment, software, or human errors are causing significant downtime. The information is also used to evaluate whether sufficient maintenance is done to the equipment and as basis for replacing it. The original system was based on paper forms, which were filled out by the person reporting the trouble, the personnel fixing the problem, and the person approving the response. About a year ago the system was changed to a web based system. In the new system a trouble report is filled out using a web browser, and the information is e-mailed to the repair personnel and managers as soon as the form is submitted through the web. The paper will discuss the problems experienced at the DIII–D facility, and how the information is used to adjust the preventive maintenance schedule for the equipment.

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