

Development of the JT-60SA Experiment Database System

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A new database system for the JT-60SA tokamak [1] has been developed. This system meets the following requirements: to hold all the JT-60SA data and prevent loss of data, to be easily available the data to the researchers without knowing internal configuration and structure of the database, to manage revision of the data so that the stored data can be traced back to an older revision at any time. In the experiment of JT-60SA, various experimental data are acquired by all systems constituting JT-60SA, such as diagnostic systems and heating systems. Depending on timing of data transfer for storage or reference, these data are categorized into three types: (i) discharge data, (ii) plant monitoring data and (iii) unprocessed data. The discharge data, e.g. plasma current and plasma parameters, is acquired in a discharge sequence. This data needs to be referred to immediately after the plasma discharge in order to analyze the discharge and to determine operation parameters of the next discharge. The plant monitoring data is acquired continuously 24 hours a day, which represents operating status of the JT-60SA systems such as vacuum vessel temperature and pressure. This type of data was not managed to the database system in the JT-60U tokamak. This data might be used to monitor the status of the JT-60SA systems for a long duration irrespective of discharge sequences. The unprocessed data is raw data to be processed into physics data and a primary source of the discharge data. This data with fast sampling frequency and/or high resolution could be used to analyze a discharge more in detail after the experiments. This data will also be used for re-processing it into discharge data when, for example, calibration data is updated. Therefore, this data needs to be associated with the corresponding discharge data and program used for the processing. Currently, we are carrying out linkage tests between the database system and other JT-60SA systems. This paper reports details about the hardware configuration and the software functions of the new JT-60SA database system.

1. H. Shirai et al., Nucl. Fusion 57 (2017) 102002.

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