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Data management system for the plant monitoring data in JT-60SA

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The data management system for the plant monitoring data has been developed for JT-60SA. The plant monitoring data are continuously acquired for 24 hours for the purpose of monitoring the condition of the hardware systems such as baking, cryogenic and vacuum exhausting systems of the JT-60SA tokamak. In the case of the previous device, JT-60, the plant monitoring data were not acquired into the common platform of the database system whereas those were accessible individually to each plant system only for a short period. Therefore, it was not adequate enough for monitoring.

For JT-60SA, the new database system has been constructed for integrating the control and management of the plant monitoring data of many hardware systems into one system. This database system provides the users with stable control and safe management of the data acquisition process of a set of all plant monitoring data without missing any data transaction. This system also provides an appropriate environment to compare easily the plant monitoring data of several hardware systems.

Most of the hardware systems acquire the plant monitoring data every one second, and these data are transferred every 15 minutes from the hardware system to the database. Each block data is associated with a unique serial number, which enables the administrator to confirm if some block data is successfully transferred in order. In case a certain block data is missing, the corresponding data will be inserted later into the appropriate location in the database according to the serial number.

The plant monitoring data is associated with its time base data at all times. For example, there are approximately 2000 kinds of data transferred from the superconducting coil system. However, only two time base data are acquired because basically the plant monitoring data of one hardware system are aligned in the same time base. Therefore, the time base data of the plant monitoring data are transferred in a separate line to prevent duplicate storage of the time base data.

The operation status and performance of the plant monitoring database system have been evaluated practically under the actual operation of JT-60SA. We have confirmed that our new database system is operated effectively by integrating the plant monitoring data of many hardware systems.

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