§35. Progress in CHS Data Acquisition and Analysis System

Takahashi,C., Minami,T., Nishimura,K., Okamura,S., Matsuoka,K

I. In this fiscal year, 3 CAMAC crates which are composed of 9 ADCs and 1 DAC, were newly installed in CHS data acquisition system (DAS). Because CHS experimental data was more than is17M byte/shot (1.7G Byte/day), the memory in VAX6310 computer was expanded from 64Mbyte to 96Mbyte. CHS data acquisition computer does not utilize virtual memory for experimental data storage. We developed direct writing of the experimental data to physical memory. The reason of this memory increase is as follows; this unique method is capable of quick reading and writing of experimental data compared with that utilizing virtual memory.

II. DAS runs in a machine time; some one wants to use it in a non-machine time, because the diagnostic system needs calibration of data which are obtained by DAS. DAS can not run under the most optimized environment in a non- machine time because DAS is designed for acquisition of large data by the computer. Then we developed two crate controller systems in one CAMAC crate. Each crate controller is linked to each computer system controlling the crate controller. This system, which is called C5 system* here, can distribute the load of computer and it can run under small data acquisition. C5 system can execute only one pair of crate controller and computer, while the other pair of crate controller and computer is resting. Each computer watches its own load. If one computer has a large load, then this computer sends a notice of being over-loaded to the other computer and transfers its task to the other computer . C5 system is modified from the auxiliary crate controller system (Type A2 standard). It can choose the computer having a smaller load which controls the crate controller and make it run. We use these characteristics for calibration of plasma diagnostics.

III. A small amount of radiation dose results from plasma experiments. Radiation monitoring system in CHS observes the dose always. Our institute has a lot of Radiation Monitoring Post (RMP) in the site. RMP includes a clock that is used for time-stamp indicating date and time. RMP records the time-stamp every hour and when it detects the radiation dose. But this time-stamps are not coincident each other, because each time is adjusted by its own internal clock in RMP. This is rather serious, because when the plasma is generated every five minutes, RMP records an incorrect time that is later or earlier independently. We can not search the event of possible unusual radiation from the plasma shot number. We developed some method to obtain an exact time from each RMP. This uses the General Positioning System (GPS). The GPS is made up of the satellite and receiver module as shown in Fig.1. The satellite sends a lot of information to the receiver on the earth. This information includes the Universal Time of Coordinated (UTC). The receiver device is installed in CAMAC/UTC module that was designed by CHS group. The radiation monitoring system of CHS can obtain a correct time from the DAS.

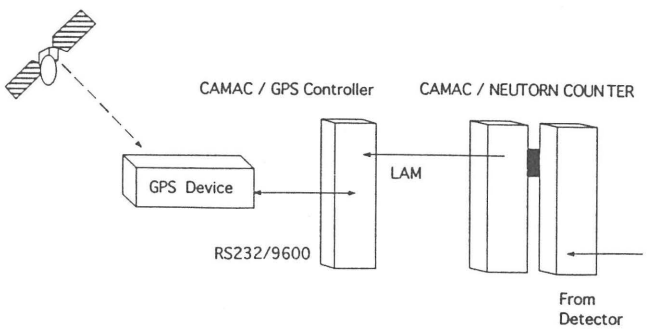

Fig.1. CAMAC/UTC system for the radiation monitor.

* C5 : Classify the Crate Controller in Camac Crate