

§20. CHS Data Acquisition and Analysis System

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The CHS project has been shut down after 17 years experimental research. The data acquisition and analysis system has been modified and improved during this period both in hardware and software. The history of the evolution can be found in the previous annual reports. Computers for data acquisition are stopped now, while those for data storage and analysis are still running so that users can access them when it is necessary. Before stopping the data acquisition computers, calibration of the CAMAC and VME modules has been carried out and these data are stored. Users can confirm the absolute signal level of the acquired data by referring them in the future data analysis. In order to maintain the computer system for data acquisition in good conditions, electric power is turned on regularly to refresh electronic circuits.

The total amount of stored data during the 17 years experiments is about five tera-bytes. Those include data with various length, such as 8, 16, 24 and 32 bit. Raw data are stored without compression in two generations for safety. Data compression to roughly 1/10 size is planned for the third generation storage. We still have old computers for data acquisition and storage such as PDP-11, uVAX and VAX. Such old machines do not accept recent recording devices, because model change of recording media is so often and their lifetime is rather short. So a VAX station 2200 has been prepared as a clone machine of the old computers (Fig.1), which supports new recording media. Then old data stored in the old computers will be transferred to the new data storage system. After completing the transfer procedures, the clone computer will be removed.

All the data are stored in two different storage media. They are dynamic referenced data stored in hard disks and static referenced data stored in magnetic tapes, MOs and so on. The dynamic storage system has a chance to be damaged on accidents such as power failure or natural disaster such as an earthquake, although it is convenient to users in accessing the data frequently. On the other hand, the static storage system is prepared for security against accidental loss of data from the dynamic storage media.

So far we have used two types of data management system, that is, DMG and MDSplus. These two data

management systems run in different computers with different operational systems. The two data formats are incompatible. So we have decided to change the data formatted by the DMG system to the data formatted by the MDSplus. Then all the data will be managed with MDSplus in near future.

Major tasks performed in this fiscal year are as follows:

- 1) Two new data analysis computer systems (DS20Es) with RAID disks have been prepared. The first one runs with UNIX operating system and the second one runs with VMS operating system.
- 2) All the data in the dynamic storage system are copied and stored in the static storage system.
- 3) The data managed so far by the DMG and other free formats are being converted to those managed by the MDSplus. They are to be stored in one of the new DS20E computer with RAID disks.



Figure.1. The clone machine to confirm the data on the CHS old computer.

Reference:

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