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SET UP OF DATA ACQUISITION FOR THE LOW-DENSITY GROUP

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Proposition

Neither the manpower available nor a reasonable timescale permits the duplication of a data acquisition and retrieval system for the low density group PDP 11/44. It is suggested that this group should accept the TCA system and use it as it is, with later modification or improvements to be added at their will. This note sets out what is available and what must be done in order that it should all work.

Reference can be made to INT's 93/79 and 96/79.

Available Software

1. Data Acquisition

Software exists to acquire data from standardised acquisition modules, so-called Simik Units, independently of their precise function, and to store such data on disk. The main program is controlled from a small data base which, itself in turn, is controlled by a small program. These programs should run on the 11/44 without change. Small programs also exist to check or display the data transfer between Simik units and PDP. It is not certain that the new duplex terminal driver in RSX11M3-2 will be useful without modifying our software. During RSX system generation, both half- and full-duplex drivers should be made available, just in case ...

2. Data Retrieval

The retrieval of data written by the acquisition software is fully working (with the odd bug or two). High level routines are available which obviate the requirement to understand how the data are stored on disk or retrieved. Thus a typical scope-trace equivalent is retrieved by a single CALL. The routines are all documented and they should work on the 11/44 without modification.

3. Utility Library

The library JOLIB contains much which is used in various parts of the software. This should work on the 11/44 without change, and all is documented.

4. Graphics Library

The graphics package exists in three parts. The high level is (almost) graphics unit independent and provides the user image. This will require little work. The lower level is half Versatec and half VDU. The VDU package is oriented towards the HP2638A and T4010 units, being itself a modified version of the Tektronix PLOT-10 package. This may have to be changed if their units are not PLOT-10 compatible. The Versatec package is a modified part of Versaplot, for the 1200A model. It is possible that minor modifications will have to be made to this part in order to be compatible with the new Versatec. All is documented.

5. Miscellanea

A considerable number of indirect command files exists for system management. These will need modifying for use on the 11/44 but they will provide a useful template. Various test programs exist for all the software previously discussed.

6. Display Data-bases

The data bases used for displaying the Tokamak data will be provided, together with their control programs. These will run on the 11/44 with no modification.

Available Hardware

The fast Simik ADC box of 16 channels multiplexed at a channel to channel time of 4 μ sec will be available early in 1981 as part of the production run. 1 - 16 channels are selectable, up to 250 samples for > 8 channels, up to 500 samples for < 8 channels. The cycle time is variable from $NCHAN \times 4\mu$ sec to 9999 μ sec. The slow software-driven ADC can have an arbitrarily long cycle time if this is needed.

If custom built boxes are to be used in real-time, then all the software must be created from scratch, in which case only the graphics facilities will be useful.

Available Effort

We shall make available the following : -

- a) A 1600 bpi type containing all FORTRAN, COMMAND and DOCUMENTATION files which exist on the 11/60 of the Tokamak group, written by PIP.
- b) A listing of this whole tape contents with vague indications of what is what.
- c) A listing of all the files on this tape.
- d) Some time on the 11/60 for complete familiarisation with our software.
- e) A limited effort to debug the whole acquisition procedure.

The Low Density Group would provide :

- 1. The transfer from tape to their disks.
- 2. The recreation of all libraries.
- 3. The recreation of all tasks.
- 4. The modifications to graphics dependent on their new Versatec and other units.
- 5. A terminal driver which is compatible with the version 3.1 software.