APPLICATIONS NOTE NUMBER 1

Nicolet Introduces Disk System

Nicolet Instrument Corporation introduced a new 600,000 word disk system and controller at the 13th Experimental Nmr Conference held in Monterey May 1 - 4. This new disk system features a movable head replaceable cartridge disk which can be used for storage of spectra or programs and has an average word transfer rate of about 25 kHz.

The principle advantage of this system is in storing the copies of spectra both before and after Fourier Transformation. For instance, the free induction decay can be transferred onto the disk and then the core copy transformed. If the signal-to-noise is insufficient, the FID can be recalled and signal averaging continued. A library of transformed spectra can also be built up disk for both educational and research purposes.

In addition, program storage is extremely easy using the disk. The FT-Nmr program can be interchanged with Nmrcal or the Assembler in less than a second. This facilitates both software development and educational uses of 1080 programs. For further information, contact your Nicolet sales representative or Nicolet in Madison.

Transform Technology Announced

Nicolet Instrument Corporation is pleased to announce the formation of a new affiliate, Transform Technology, Inc., of Palo Alto, California. TTI is composed of several experienced nmr designers and marketing people who plan to offer a number of laboratory instrumentation packages. Their first project is the production of a superior pulsed-Fourier package for existing Varian XL-100's. Future projects will probably include retro-fit packages for other spectrometers. For technical and pricing information, contact your Nicolet representative or Mr. Jerry Holcomb of TTI at (415) 969-2076.

Constant Speed Plotting Routine

The plotting routine called from FT-Nmr 1972 by the command PL is different from those available under hardware control of the 1080 in that it plots out the same number of steps in the x and y direction regardless of the interval between points. It effectively draws the most precise possible diagonal line between two data points, interpolating so that all points between the data points are drawn. The result is that the plotter pen moves at the same speed regardless of the distance between data points, eliminating pen skipping.

This routine can be interfaced to any existing spectrometer plotter, whether an x-y plotter or a y-d plotter. Instructions are given below for three common spectrometers. Feel free to contact Nicolet for further information.

Bruker Spectrometers

Bruker nmr spectrometers contain x-y plotters. The output voltages of the BNC plugs marked Pen Horizontal and Pen Vertical should be connected to the x and y input lines of the plotter. The output of these jacks is one volt full scale. Adjustment of the Bruker gain controls should easily allow the user to fill the plotter paper.

Existing Bruker installations have the plotter driven by the y output of the pen recorder and the x-axis driven by the sweep ramp output from the sweep plug-in connector pin E. To modify this, simply disconnect the wire from pin E and connect it to the Plotter Horizontal jack at the rear of the 1080. For further information, contact Nicolet or your nearest Bruker office.

JEOL Spectrometers

The JEOL spectrometer has a y-d recorder of either 5400 or 8192 steps. Most installed JEOL spectrometers will have the 5400 step x-axis. The y-axis connection to the pen recorder is from the Pen Vertical output at the rear of the 1080 to the phone jack REC. IN connector at the rear of the PS-100. The x-axis connection is from pin J2 at the rear of the 1080 (the intensify pulse) to the six pin star connector underneath the PS-100 recorder. This jack contains a center ground pin and five surrounding pins. Application of a pulse to pin 1 of the five surrounding pins causes the recorder to be moved one step to the right. Application of a pulse to pin 2 causes the recorder to be moved from right to left one step.

The number of steps full scale in the PL routine is changed by modifying the contents of location 3670 after FT-1972 has been loaded.

Location	Was	Change to	For Recorder Steps
3670	100000	25060	5400
3670	100000	40000	8192

To use the plot routine, type PL, press Plotter Realtime or Plotter Autoslew to unclamp the outputs, turn on the plotter and position the carriage at the left end. They type Return. The plotter should slowly advance as the spectrum is plotted out. For further information, contact Nicolet or Dr. Gary Samuelson at JEOL in Cranford, New Jersey.

Varian XL-100 Spectrometers

Varian spectrometers have a 10,000 step recorder covering 50 cm. To advance the recorder, connect pin J2 from the 1080 rear panel to pin J of connector J-024. The application of 5 volt pulses from 1080 jack J2 will step the recorder to the right if pin A is set to +5 volts and to the left if pin A is grounded. This stepping is only enabled if pin L

is grounded. For further information, contact Nicolet or Mr. Vern Burger of Transform Technology, Inc.

Since it is necessary for the computer to produce 10,000 steps full scale, the contents of memory location 3670 must be changed from 100000g to 47040g.

In general, the number of steps for the computer to produce full scale should be multiplied by 2, converted to octal and stored in location 3670.

Using a High Speed Punch with FT-Nmr 1972

The punch command PL) can be caused to punch out the contents of the displayed area on a high speed punch rather than a low speed punch by simply changing the following locations:

Location	From	To
3203	6444 (TTYPF)	6474 (HSPF)
3205	4443 (PRTTY)	4474 (PHSP)
3211	110100 [MEMA(100]	110400 [MEMA(400]