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SLC Control Program

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Schedule for SLC Database Installations

March 19, 1990

Author: *Terri Lahey* **Subsystem:** *Database* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

The schedule for Database Installations on MCC is:

Database Install	Data Due
12 April, Thursday	5 April, Thursday
26 April, Thursday	19 April, Thursday

The following database installation will depend on the accelerator startup schedule:

Database Install	Data Due
17 May, Thursday	10 May, Thursday

To add a typical device to the control system database, please submit all data by the "data due" date, or sooner. The sooner we receive the information, the more likely that your device additions/removals/changes will occur in a given database install.

Send database changes via electronic mail to TEL@SLACSLC or LAHEY (on VM), or in writing to BIN 55.

Wire and Beam Scan Software Update

March 20, 1990

Author: *Linda Hendrickson* **Subsystem:** *Accelerator* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *Yes* **Help File:** *No*

The Wire and Beam scan software has been modified to support the new generation of wire scanners which will be installed this summer in the Linac and Final Focus. It has also been made more database-driven to make it easier to add additional wires as they are installed.

The new wire scanners have an X wire, Y wire and an optional U or V (diagonal) wire connected to a single wire carriage. The new software allows the user to access these wires from a single column of panel buttons. The user may toggle between scan planes for the new wires in the same fashion as different wire sizes are toggled for the IP Flipper-type wires. For each beam, separate scan ranges are provided for each scan plane which is available (X, Y and U or V).

For the new type of Flying wires, the PARK position is the location to which the wire is inserted prior to scanning; the wire is also left in this position after a scan. PARK is intended to be just outside of the beam path. Previous software supported a single PARK position for each wire scanner unit. The new software accommodates either separate PARK positions for each individual wire, or a single PARK position for the entire unit. If the PARK secondary in the WIRE database has separate (and different) values entered for the individual wires, then the Position states displayed on the panel are "PARK_X", "PARK_Y", etc when the wire is inserted. Otherwise the inserted position is represented as "PARK".

The correlation plot interface to wire scans has been modified to accommodate selection of the scan plane in addition to the database micro and unit. The eight-character pseudo-secondary names for correlation plots primary WSCN have been modified to include the scan plane designation in the first character. These secondaries represent the fitted gaussian parameters from a single wire scan. The new names are X_OFFSET, X_PEAK, X_CENTER, X_WIDTH, X_WIDSQ, X_CHISQ and corresponding names beginning with Y, U or V as applicable. Secondaries are validated according to unit, so for example the user may not request U_CHISQ for a wire which does not scan in the U plane. Wild card secondaries X*, Y*, U* and V* allow the user to fill correlation plot buttons with all available secondaries for the given scan plane. The ALL* wild card fills buttons for all valid planes for the selected unit.

In order to improve software maintainability, the wire and beam scan software has become more fully database-driven. The new software identifies WIRE units or beam scan definitions from panel buttons by primary (WIRE or BSCN), micro and database unit number. A new BSCN database primary has been added to support this change for beam scans. Previously 4-character mnemonics were used, forcing the software to maintain hardcoded lists of valid WIRE units and beam scans. In the future, when new WIRE units of the same type are added they should require only database and panel changes. BPM units which are read during a scan and used to normalize scan data are now identified by database secondarys NBPM and BPMU. NBPM is the number of BPMs which are read, and BPMU is a variable-length list of BPMS unit numbers. It is assumed that the BPMs read are in the same micro as the WIRE or BSCN. The software checks if each BPMS is offline and if so it is not used.

The scan range (start, steps and step size) now has default values obtained from database secondarys STRT, STPS and SSIZ. At the same time, the maximum number of scan steps allowed for wire or beam scans has been increased from 50 to 100. In addition, the default index for the individual wire selected within each wire scanner unit is set according to the IWIR secondary in the WIRE primary. As in previous software versions, if the WIRE or BSCN database is edited, running SCPs may be forced to recognize the change by selecting the REINIT DB VALUES button from the SCAN OPTIONS panel. The wire scan software has been modified to check the HSTA database value for each wire unit when it is first selected and each time it is scanned. If the HSTA value is offline, the wire may not be scanned or inserted.

The BPM definition selection software for wire and beam scans has been modified to support the new wire scanners. Functionality of the ENTER BPM DEF button has been modified so that the user may enter a BPM button number for any definition with the correct particle (electron or positron). Previous software limited selection of BPM definitions to specific display groups and bunches. In addition, when the user accesses the Beam Scan panel the IP_2BEAM BPM definition is now automatically selected, although the user may choose to select another definition after accessing this panel. The Final Focus Wire Scan panel does not force selection of any particular BPM definition. Panels for the other wire scanners such

as the LI28 WIRE panel force BPM definition selection to either an electron or a positron definition if the IP_2BEAM definition is active. Eventually more software modifications will be made to ensure selection of an appropriate BPM definition for various regions.

The Beam Collide Panel, which was seldom used, has been made obsolete. Its functionality is supported on other existing panels.

BPM Sampler Control Panel

March 22, 1990

Author: *Lou Sanchez-Chopitea* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *None* **Help File:** *None*

The Fast and Slow BPM Samplers developed by Paul Emma have been fully integrated with the online BPM Updating Displays. To make it easier to use the sampler, new software has been added to allow a user to start a Fast Sampler acquisition directly from a SCP. Previously a user needed to log on to another terminal and start the Sampler from a standalone process. Additional displays allow the user to look at the parameters and status of all current or completed Fast or Slow acquisitions.

A new panel [BPM SAMPLR] is available off of the Special Displays Panel. It allows users to start and delete the acquisition of logged data, monitor the progress of current and ended acquisitions, and display information on the devices logged by an acquisition.

To start a new acquisition, the user first sets up the sampler parameters using the # OF SAMPLES, SAMPLE DELAY, PULSES to AVG, FIRST MICRO and LAST MICRO buttons. An identification tag should be supplied with the USER ID button. The user may specify a file containing the list of database devices to read along with each BPM sample using the ENTER DB FILE button. The BPM definition used for the acquisition will be the one currently selected on the BPM panels. The selected definition must have a public calibration and will be displayed on the panel. After all parameters have been set to the desired values, the user pushes the [ADD SAMPLE] button to start a new acquisition.

The [DISPLY ALL] button brings up a summary display with the status of all current acquisitions. A pointer on this display allows the user to select one of the acquisitions for more detailed information. It can be moved up or down with the INC POINTR and DEC POINTR buttons. All of the parameters of the currently selected acquisition may be selected with the DISPLY FULL button. The contents of the files that regulate the data acquired can be displayed with buttons DISP DB INPUT and DISP GADC INPUT. A summary of the completion status for the last acquisitions completed can be shown with DISPLY ENDED ACQS.

An acquisition may be aborted by selecting it with the pointer and using the DELETE SAMPLE button. Obviously this capability should be used only to abort the user's own sample or in the case of problems. A prompt will confirm that the action is really what the user desires.

New Version of MATLAB Online

March 22, 1990

Author: *Keith Jobe* **Subsystem:** *Numerical Analysis* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *Yes* **Help File:** *Yes*

Matlab version 3.5 in now available on the VAX as the default. The prior version was 3.32. This new version is very similar to the Macintosh version, and includes the following exciting features:

- More signal processing tools.
- Color graphics support for smart enough terminals.
- Non power-of-two FFT (watch out, processing non 2^n size arrays is slower).
- Save /ASCII command for saving a human readable version of any (or all) variable(s).
- Functions i and j (for imaginary numbers) exist by default.
- Axis command is now interpreted literally, and no longer tries to be a bit smarter than you.
- New plotting tools.
- New interpolation and equation solving tools.

Help files on the new features may be viewed by entering: *help readme, readme2, readme3, readme4* (readme1 is missing). As usual, there are more licensed toolboxes on the SLC Vax than on the MCC Vax. Matlab will not work on a workstation.

Manuals are available from the Software group secretary, if needed. Bring your old black binder manual. If you have Mac-Matlab or if you are an infrequent user, please consider not getting a new manual set, since they are in short supply. The online help is actually more accurate and complete than the manuals.

SLC Development tools are in the directory MATLAB_SLC:, which is a group-write access directory. Only routines of general interest should go in this directory and should contain comments which are usable as help files. Please contact myself (Keith Jobe) or Paul Emma for information. Note: all the tools in the directory [username.MATLAB] and in your default directory are accessible by matlab.

MPG Rate Limit Diagnostic Display

March 22, 1990

Author: *Tony Gromme* **Subsystem:** *MPG* **User Impact:** *Small*
Panel Changes: *One* **Documents:** *None* **Help File:** *None*

A new diagnostic display has been added to the Beam Rate Control panel. It is selected with the button

MPG BM VETO DISPLY

and shows a full second of Rate Limit and Veto information. The display lists 360 pulses with the pulse number, PPYY broadcast, veto patterns received, digital input data read, and rate limiting conditions set by the MPG. Veto and digital bits are shown in hexadecimal format and not decoded. Brief mnemonics show rate limit and single beam dumper states. The display is intended to be a brute force diagnostic and hence is rather unadorned. If desirable, more decoding and mnemonics may be added in the future.