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SLC Control Program

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Speed Improvement for Klystron Displays

April 19, 1989

Author: *Bob Hall* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *None*

Many klystron displays will now be generated faster in response to a touch panel button push. The speed improvement is especially noticeable for displays on the KLYSTRON ALL* panel where information from many micros is displayed. These include most of the Z plot displays, the Sector, and the Phase displays.

This speed improvement is made possible by recent changes to allow automatic device checking in micros. For the affected klystron displays, pushing a button to request a display will result in the needed micro data to be obtained directly from the database. This is due to the klystron micro job cycling periodically and updating the VAX database whenever a value has changed significantly in the micro. Previously, pushing a button to request a display caused a message to be sent to all the affected micros. Each klystron micro job would then gather data from the devices and send the values to the VAX for storage in the database before the display could appear. For more information, see the article "Automatic Device Checking in Micros" in the March 31, 1989 issue of Index Panel.

In rare cases where up-to-the-second data is required, pressing a button twice in rapid succession for the affected displays will cause a request for data to be sent to all the micros from which data was desired in the same manner as was done before. In these cases, no speed improvement will be observed.

PIOP Code Improvements for Klystrons

April 19, 1989

Author: *Miguel Flores* **Subsystem:** *Linac* **User Impact:** *None*
Panel Changes: *None* **Documents:** *No* **Help File:** *None*

The PIOP software has been updated to include the following improvements.

1. Fox phase shifter stepping motor control now uses half steps to double the number of steps per revolution of the Fox phase shifter. This gives a phase request resolution of one eighth of a degree.

2. The PIOP veto timeout duration has been reduced from twenty seconds to seven seconds. If a station asserts veto for more than seven seconds, then veto assertion is disabled until the station is good for seven seconds. This will allow the energy feedback systems to correct the energy after only seven seconds instead of twenty.

3. The PIOP now logs internally the number of amplitude vetoes (when the RF amplitude is less than 80% of desired) that the station has asserted since the PIOP was booted or since the internal log was cleared. The internal log can be examined using the Klystron Error Display from the SCP program.

Miscellaneous Magnet Code Changes

April 19, 1989

Author: *Mario Mere* **Subsystem:** *Magnets* **User Impact:** *Medium*
Panel Changes: *None* **Documents:** *None* **Help File:** *None*

There is a new release of the magnet software with several improvements. A new database slot, DACV, has been added to all magnets and other analog control devices to hold the last value actually written to each DAC. This value is updated every time a DAC is changed by the micro software. It will NOT reflect changes made with diagnostic knobs.

These DACV values are used to improve the recovery after crate power has been cycled. The reset procedure now resets each DAC channel to the last stored DACV value before trying to trim the devices. This procedure should eliminate problems with certain devices such as the LI30 off-axis profile monitors which do not trim correctly when starting from a DAC value outside the valid operating range. Similarly, it should improve handling of the Damping Ring RF controls which also did not trim from out of range. Note that devices controlled by a PSC module are not automatically reset after power is cycled and must be manually turned on from the VAX. (CATERs 6683, 7618, etc.)

There has been a change to the hardware interface for some of the kickers so that a status bit is asserted whenever the device is receiving triggers. The micro software now checks for the presence of triggers for those PSC controlled devices which are identified as triggered by the Hardware Descriptor bit (HDSC) 800 hex. If triggers are not present, no attempt is made to Trim or otherwise move the DAC, and a yellow NoTrigger status is displayed on the standard magnet displays. So far all Damping Ring Kickers and the Positron Extraction Line Kicker have been upgraded.

The ADC data settling time calculation has also been improved to minimize the delays associated with Trim requests when only PAU controlled devices are being trimmed. This will speed up certain Trim requests. Handling of summary status messages has been changed to get rid of spurious "No units selected" messages (CATER 7095) and to correctly report an Error for devices missing triggers. A minor change to the panel handling code was made to get rid of the "No button found" messages on the LI30 profile monitor panels (CATER 6868).

Changing the Timing Delay on a VDU

April 19, 1989

Author: *Terri Lahey* **Subsystem:** *Timing* **User Impact:** *Medium*
Panel Changes: *none* **Documents:** *No* **Help File:** *None*

The timing code will be modified so that when a timing delay is changed for a Vernier Delay Unit (VDU), the time for all beamcodes will be changed by the *same delta amount.* Changing the timing delay for a VDU via knobs, multiknobs, or Enter TDES will result in the same delta change on all active and all previously active beamcodes.

Existing multiknob definition files will have to be modified to request a change on only a single beamcode. Because of the need to change both the code and the knob files together, the change will be implemented in the near future whenever proper coordination can be done.

PDU HSTAs

April 19, 1989

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

Programmable Delay Units (PDU) in the timing system can now be enabled and disabled via the database PDU HSTA. The status of a PDU can be displayed with the PDU STATUS DISPLAY. This feature can be used for disabling an existing PDU, or for adding a new PDU to the system. The micro timing system will ignore disabled PDUs.

PDU Status Displays

April 19, 1989

Author: *Terri Lahey* **Subsystem:** *SCP* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *Yes*

There are two new SCP displays to display the status of PDUs. These will assist in diagnosing problems with PDU fiducials. The first is a general PDU status display, and shows the status of all PDUs defined in the system. The second is an error display, and shows the PDUs that currently have some error. The messages and color codes for PDU status are:

COLOR	STATUS	MEANING
Green	OK	PDU good (seen on total summary only)
Red	CRATE	Crate offline
Red	NINIT	PDU not initialized
Red	FNONE	FID NONE—no fiducial in last fiducial check
Yellow	FMISS	FID MISSING—fiducial missing detected in last fiducial check
Cyan	OFFLN	PDU offline in HSTA

These displays are available on the Network Index panel. In the bottom center of the panel, there are two new buttons: [PDU STATUS DISPLAY] and [PDU ERROR DISPLAY]. These displays will update about once a minute.

SDS Micro Status

April 14, 1989

Author: *Ralph Johnson* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *No* **Documents:** *No* **Help File:** *No*

The routine used to summarize micro status has been changed to include a check for offline PDUs. The status of any PDU which is offline will not be included in the summary status for the micro.

Cluster Status Display

April 19, 1989

Author: *Helen Kirby* **Subsystem:** *Cluster Status* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *None*

The micro status display (off the network panels) will now indicate (in blue) if the cluster status micro bit is offline. An extra column (the "offline" column) has been added to accommodate this.

Final Focus Eta Measure

April 18, 1989

Author: *Len Sweeney* **Subsystem:** *Final Focus* **User Impact:** *Large*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

The Final Focus eta (dispersion) measurement system has been upgraded to work correctly with fast energy feedback. If fast NARCENGY feedback is active, it will be used as the step variable. Otherwise, slow NARCENGY feedback is put into REQUEST mode and used as the step variable. If no energy feedback is active, no measurement is attempted.

The new code also suppresses unwanted feedback loops during the measurement. These loops are specified in the files SLCMODL:ETA_FEED.NORTHFF/SOUTHFF.

Wire and Beam Scan Software

April 19, 1989

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

Several changes have been made to the wire scan and beam scan software.

1. A new feature has been added to beam waist and quad scans which allows auto-recentering of the beams before each scan step to correct for steering effects. This feature is enabled by toggling the [BSCN AUTO RECNTR] button from the FF Scan Options panel. The button provides a three-way toggle, for which the default is OFF. The 2 PLANE option recenters the tuneup beam in both planes before each step of the scan. The 1 PLANE option recenters the tuneup beam only in the opposite plane from the scan, which may be adequate and is faster than the 2 PLANE option. Both options use the A3 correctors to recenter the beam, and they are restored to their original values at the end of the waist scan, even if the scan is aborted.

2. A [MONITR SCAN] button has been added to the Final Focus Beam Scan panel to allow users to monitor beam deflection, position and beamstrahlung data without moving the beam. This function takes the number of points specified for the currently selected scan plane and beam, similar to the existing Single Scan function. Previously, such scans could only be done by setting the range start and step size to zero.

3. Luminosity calculated from the Auto-Collide function was previously stored in the database as IPBM, FB69, 1, LUMM in units of (/cm^2/sec). Values are typically too large for history buffer plots to work correctly, so the LUMM value will now be saved into the database in units of (1.0E27/cm^2/sec). The auto-collide display will continue to output the luminosity in units of (/cm^2/sec).

4. Users should be aware that default ranges are being changed for wire, waist, and quad scans per W. Kozanecki's request. Additional modifications have been made to alter the format of the waist data file, to fix bugs acquiring beamstrahlung data, and also to write an error log message when wire or beam scans are performed.

New All Micro Statistics Display

April 19, 1989

Author: *Helen Kirby* **Subsystem:** *Micros* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *None*

The statistics displays used for monitoring cycling jobs in the micros now allow the user to select all micros either for a specific function or for all functions. These displays are available on the Auto Check Display panel off of any of the Cluster Status panels.

BPM OneQ Messages

April 20, 1989

Author: *Tony Gromme* **Subsystem:** *BPM* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

The micro code which handles Final Focus BPM modules has been modified to suppress the ONEQ error messages when low beam current causes only one of a pair of processors to get a proper gate.

BPM Panel Changes

April 17, 1989

Author: *Lawrence Searcy* **Subsystem:** *BPM* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *No*

The titles on the BPM panels have been changed. Instead of elec or posi in the titles, they now read e- and e+. This brings them into agreement with the private calibration titles.

Difference Orbits

April 17, 1989

Author: *Alan Rackelmann* **Subsystem:** *BPM* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *Yes*

The Operators Maintenance panel has been modified to include button macros that access a master BPM reference orbit file and provide the operator with a difference orbit for any region of interest. The master file contains a list of all pertinent gold reference orbit configs. If you need to change the gold reference orbit, use the button [UPDATE BPM REFRNC]. Look at the help file for this button for more information. To check which reference orbits are currently in the master file, use the button [READ BPM REFRNC]. This will type the file on your terminal.

Also new on this panel are two buttons: [LIST GOLD MAGNET] and [UPDATE GOLD MAGNET] which are an attempt to provide an on-line SLC CONFIGS BOOK. These buttons are appearing on a trial basis (use 'em or lose 'em).

The old Operator Maintenance panel is located in the lower right corner of the new panel. Please let me know if any problems arise.

Summary Displays

April 14, 1989

Author: *Ralph Johnson* **Subsystem:** *SLC* **User Impact:** *Some*
Panel Changes: *None* **Documents:** *Yes* **Help File:** *Yes*

The summary display compiler now returns input–file syntax errors. If an error is encountered, the previous and the current line are listed. This should helpful in finding editing errors. The device checking at compile time has also been improved; all units are checked for validity. Specifications which require run time substitutions cannot be checked. If there is a syntax, device access, or other errors during compilation, a new data file will not be created.

Several new features have been added to the numeric and thermometer graphic elements. There is now a qualifier to permit adding, subtracting, multiplying, and dividing device values or supplied constants before the final value is displayed. There is an additional qualifier for thermometer display elements to permit a set of limits to be supplied as part of the display definition. Also for thermometer displays, one can now inhibit the display of a bubble's tube, the current numeric value, and the severity color coding, to perform operations on the value(s) before the final display is generated

History Plots

April 14, 1989

Author: *Ralph Johnson* **Subsystem:** *SLC* **User Impact:** *None*
Panel Changes: *None* **Documents:** *Yes* **Help File:** *No*

Several new options have been added for history plot displays. There is an option to allow data to be plotted with a logarithmic vertical scale. There is also a "VLIMITS" qualifier option to fix the plot vertical limits to values supplied in the display definition. If you are more interested in packing lots of plots on a screen than seeing the time labels, you can now add a qualifier to the display definition to suppress them.

These features and those for the summary displays have been added to the following file:

Suppression of Some Feedback Error Messages

April 20, 89

Author: *Uzi Arkadir* **Subsystem:** *Feedback* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *None* **Help File:** *None*

The following message codes for no-beam conditions in FEEDBACK no longer generate errlog messages:

efb_poor_data

efb_bpm_data

efb_inj_data

This was done in order to reduce the cluttering of the ERRLOG file.

BACKUP File Restorations

April 18, 1989

Author: *Larry Stein* **Subsystem:** *BACKUP* **User Impact:** *Helpful*
Panel Changes: *None* **Documents:** *This is it* **Help File:** *Part of COM file*

The purpose of this article is to document the procedure used to restore a file from BACKUP tape.

The main tool for this procedure is the RESTORE command which is available system-wide. The procedure, with comments, follows:

1. Type `RESTORE`. You will be prompted for the disk to restore.

2. Your response should be a number. Help for the appropriate disk number can be obtained by typing (*before* you start the RESTORE procedure) `SHOW DEVICE D`. Unfortunately, the definition of which disk contains which files has changed several times in recent history. The command listed above shows the *current* definition of the disks. If you are unsure which disk to search, make your best guess and proceed to the next step; you can always start over, using a different disk number next time.

3. You will then be presented with a list of journal files for the disk you have chosen. It is generally a good idea to check the most recent *Monthly* (full) journal for the existence of your file on the chosen disk at the beginning of the current month. If the file is found, the procedure will show you the tape label and volume number on which the file resides; if the file is not found, this information will not be shown, but otherwise the command will proceed identically, asking you whether you want to search another journal file. A file is only backed-up weekly or daily if the *Modify Date* has changed during the period covered by that backup (seven days in the case of the weekly backups and the time since the last daily backup in the case of the dailies).

4. Next you will be asked if you want to search another file. You should normally search backward in the dailies to the most recent weekly and then in the weeklies to the nearest monthly. There are generally two copies of the weeklies and dailies; version numbers may be used, but usually only the most recent version need be consulted. Of course, if you know when the file was last modified you can pick the appropriate journal file immediately. When you have found the correct backup journal, respond `NO` to the prompt to search another file (the default response is `YES`).

5. At the prompt to restore a file, type `YES` (the default response is `NO`).

6. Obtain the tape specified during the search procedure. Daily backups are kept in the MCC VAX room, a copy of all weekly backups and the most recent monthly backup are kept in a vault in the basement of the Central Lab Annex. Keys to the tape vault are held locally by DNM and LNS; in a pinch, access can be obtained through the SCS Tape Librarian, Ernest Denys, who works for Teri Cram. If it is required to obtain a tape from off-site storage, there are differing prices depending on turnaround time: 1-hour, 2-hour or 1-day in order of descending price; a request for off-site retrieval must be made through E. Denys.

7. After the tape is mounted, you will be prompted to verify the journal and individual filenames. then it will prompt you for the replace option desired in the case that another file is found with the same filename *and version.* The default is to do nothing; this action may be dangerous in some circumstances, but is normally what is desired. Other options are listed in the command procedure itself. A message is generated upon completion of the file restore to tell you whether it was successful or not. If the volume number is not the last one on the disk, you will be prompted to mount the next volume; this can be ignored once you get the message concerning the file in which you are interested and a control-C typed to end the procedure.

8. If it is necessary to do something special such as restoring a file to a different directory than the one in which it was originally located, the RESTORE command file may not be used; instead, you must use the regular **BACKUP** DCL command with the appropriate parameters and qualifiers. The RESTORE command *can* still be used to locate the appropriate tape, however.