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SLC Control Program

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Online Gold Configurations

July 12, 1990

Author: *Daniel Van Olst* **Subsystem:** *Configurations* **User Impact:** *Moderate*
Panel Changes: *Many* **Documents:** *No* **Help File:** *Yes*

New software has recently been released in support of online 'Gold Configurations.' This software will eventually replace the SLC GOLD CONFIGS book. This initial release has complete support for all types of configurations except for BPM reference orbits.

A gold configuration is simply a configuration file that has been given special status for a particular machine region (usually by the area physicist.) It is usually the 'best known' configuration number that has been saved. It generally is used as a starting point for tuning up part of the machine, or as a standard for checking the state of part of the machine.

Only one gold configuration is permitted at a time for a particular region (although one does not have to be defined; the gold configuration for a region can be 'NONE'.). The gold configuration must be a previously saved NORMAL configuration number. A SCRATCH configuration is not allowed to be the gold configuration for a region; however, the SCP supports moving configuration numbers from SCRATCH to NORMAL (see CONFIG INDEX).

The main panel for working with gold configurations is the [GOLD CONFIG INDEX] which is off the [CONFIG INDEX].

Following is a list of functions available from the Gold Configuration panel.

- [CHOOSE NEW GOLD] allows the gold configuration number to be re-defined for a region. The selected region is offered as a default. A valid NORMAL configuration number must be chosen as the gold configuration. ('NONE' is an acceptable alternative to a configuration number.)
- [LOAD GOLD CONFIG] acts just like the 'LOAD CONFIG' button on the CONFIG INDEX panel, except that it offers the gold configuration for the selected region as a default.

- DISPLY GOLD HISTRY displays information for each time the gold configuration was changed. The most recent entries are listed first. The top entry is the current gold configuration.
- DISPLY GOLD INDEX displays the gold configuration number for all regions of the machine.
- DISPLY GOLD SUMMRY is just like 'DISPLAY GOLD INDEX' except that it only displays the most frequently used regions for your viewing pleasure. If you wish to change which regions are the 'most frequent', edit the file SLCCNF:CONFIG_SUMMARY.CNF
- DISPLY GOLD CONFIG is just like the 'DISPLY CONFIG' button on the CONFIG INDEX, except that it automatically displays the gold configuration for the selected region.

Additional points to note include:

- The 'DISPLAY INDEX' function on the 'CONFIG INDEX' panel will note the gold configuration by preceding it with a 'G' and highlighting it in magenta.
- The 'DISPLY LOADED CNFGS' function on the same panel has been clarified and now shows if the loaded configuration is the gold configuration.
- Deleting gold configurations is not permitted by the software.
- Gold BPM reference orbits are only supported in a limited fashion at this time, but future enhancements are planned. More information is available on creating and using gold BPM reference orbits from Dan Van Olst at Ext. 3475.

Steering Improvements

July 18, 1990

Author: *Tom Himel* **Subsystem:** *Steering* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *Yes*

Several new features have been added to the steering package. They were introduced to help steer through the LI29-LI30 collimators, but should be useful in other regions also.

New RMS Weighting Methods

There are now five variants of coupled RMS steering which involve changing the weights on the terms whose RMS is being minimized. These are selected with the RMS STEER TYPE button on the bottom of the steering diagnostic panel. The possible methods and their effects are listed below.

CONSTant
All BPMs have an equal, constant weight in the RMS that steering minimizes. This is the default and what RMS steering has always done in the past.

SIGMA
When multiple BPM readings are averaged an RMS is calculated. This RMS is used to weight the BPM reading in the minimization. Hence BPMs with a small RMS will count more in the minimization procedure.

BETA
The BPM reading is weighted by one over the beta function at the BPM. That is a BPM with a small beta will have a large weight and hence will count more in the minimization procedure.

e^+e^- DIFFerence
At this setting, if two beams are being steered, steering will try to correct both the difference between the electron and positron orbits and the absolute electron orbit instead of separately minimizing the electron and positron orbits. The relative weight given to the difference as opposed to the absolute orbit is set with the RMS STEER WEIGHT button.

Minimize CORRector strengths:
At this setting, the corrector strengths are minimized in addition to the BPM readings. The relative weight given the BPMs and correctors is set with the RMS STEER WEIGHT button. Details of how this weight is used are available in the help for that button.

Note that the first 3 methods were written by Leonard Wiggins several years ago but were never debugged. They have now been debugged and the last two methods added. It is the 'minimize corrector strengths' method which works well in the LI29–30 collimator region steering.

The power steering system can setup to use these new weighting methods and one has been implemented for the LI29–30 region.

▪ Two Beam Calculated Trajectory Display

When you steer one beam you normally get a display showing the measured and calculated (prediction of what the orbit will be after the steering corrections are applied) trajectories. However when steering two beams the display shows the measured trajectories for the two beams. It was quite difficult to get a display of the calculated trajectories.

Now when you are steering two beams there is a TRAJ PLOT TYPE button in the lower left hand corner of the STEERING panel. This toggles between CALCulated and MEASured and determines which type of trajectory will be displayed.

▪ Power Steering Can Default Devices to off

The power steering system now allows one to include devices (BPMs and correctors) which start out turned off. This allows one to include BPMs whose reading will be displayed but which will not be used in the steering calculation. It also allows one to include many correctors with only a few set up to be used by steering. The operator can then go to the BPM SETUP panel and turn on some of the other correctors if needed.

▪ Power Steering Now Defaults to Two Beam Steering

In regions where there are both positrons and electrons, power steering now sets up to steer both beams. In the past it defaulted to steering just the electron beam and the operator normally had to toggle it to do 2 beams.

Enhancements to Printer Control Facility

July 18, 1990

Author: *Ed Miller* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *Many* **Documents:** *No* **Help File:** *Yes*

A number of enhancements are being made in the SCP printer control facility. The major changes are (1) the addition of buttons for saving and restoring print configurations and (2) the merging of the separate graphics and text output selection switches into a single switch which can do both selections.

- Three buttons have been added for saving and restoring the print configuration of a SCP. These are most useful within button macros, to assure the proper state during and after button macro execution. [SAVE CURRNT CONFIG] will save the current SCP print configuration. [RESTOR SAVED CONFIG] will restore the previously saved configuration. [RESTOR STNDRD CONFIG] will restore a 'standard' configuration, which is basically the initial SCP configuration with all the toggles forced to their normal default states.

  Authors of button macros are encouraged to use these new buttons (on the auxiliary print control panel) in the following manner:

  1. *Save Current Config* – save current state so it can be restored at end of button macro procedure.
  2. *Restore Standard Config* – put print control panel into a reasonably well-defined state before making your changes.
  3. Your specific button macro code. If you are running in COLLECT, specify your own collect name, so you won't conflict with the current collect file of the SCP, if any.
  4. *Restore Saved Config* – to put the print control state back to where it was before button macro was started.

- The separate text and graphics output selection switches have been combined as a single switch. This new switch will ordinarily select a common destination for both text and graphics output. A new toggle button [OUTPUT SELECT TOGGLE] has been added which can be used to change the meaning of the output select switch. The three positions of this toggle are 'BOTH' (for selecting a common output destination for text and graphics), 'TEXT' (for selecting text destination only), and 'GRPH' (for selecting graph destination only). Note that some common cases where graph and text output must be different are handled automatically even though this toggle is in its normal 'BOTH' position. For instance, selecting output to the MCC Color printer will change only the graphics output, leaving text output unchanged (since printing of text files on this printer is not supported).

- A few miscellaneous changes have been made as well. The IMPEP2 printer has been added to the list of standard accessible printers. The choice of Unified Graphics types has been expanded to include TEKEMUL (which can be used on Imagens as well as the standard IMGN300 type) and TALARIS (though currently there are no Talaris printers directly accessible from the SLC cluster).

Note that the changes above will require changes to existing button macro files. At the time of release, all existing files will be modified to work with the changed panels. Authors of these files are encouraged to further modify (if necessary) those button macros which COLLECT output, supplying a collect name within the button macro procedure.

Cater Numbers in SDS

July 12, 1990

Author: *Ralph Johnson* **Subsystem:** *All* **User Impact:** *Some*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

A new feature has been added to the SDS system so that cater numbers can be included for devices which are set to the acknowledged or deferred state.

- When a device is toggled to acknowledged or deferred state the user will be prompted for a cater number. Any current cater number for the device will be replaced by the entry. If one enters only a carriage return the current cater number will be retained.
- When a problem is cleared the cater number will be removed for the selected device.
- When one displays acknowledged or deferred problems the SDS Severity column is replaced by a SDS cater # column.

PEP in Summary Status Display

June 28, 1990

Author: *Ralph Johnson* **Subsystem:** *All* **User Impact:** *Some*
Panel Changes: *Few* **Documents:** *No* **Help File:** *No*

The Summary Status Display above the operations consoles has been modified to include a column for PEP. To provide room for the new column the scavenger/extraction and E+/EP02 columns were merged into a single SCAV & E+ column. At present there is only one summary in the PEP column. We will add more as signals from the NIT/SIT lines, etc. become available in the VAX.

New Summary Display Status

July 2, 1990

Author: *Ralph Johnson* **Subsystem:** *Accelerator* **User Impact:** *Some*
Panel Changes: *None* **Documents:** *No* **Help File:** *None*

The following status has been added to the INJECTOR, OBSTRUCTIONS box on the Summary Status Display: PEP/SP Burst State, PEP/SP Fid-2 State, and the PEP/SP Fid-3 state. These are database items ILCK,LI00,2, channels "PEP 1", "PEP 2", and "PEP 3".

They are only included in the summary when the machine is operating in the PEP mode and will be excluded for all other operating modes. They presently appear in the list at the end of the LI00 items.

TMIT History Plots

July 12, 1990

Author: *Ralph Johnson* **Subsystem:** *Feedback* **User Impact:** *Some*
Panel Changes: *Few* **Documents:** *No* **Help File:** *No*

There are new buttons on the feedback loop select panel and the feedback history plot panel to plot TMIT history data. These are plots of average TMITs for all the BPMs in the selected feedback group.

Operator Rate Limit Status on VAX

June 15, 1990

Author: *G. Smith, J. Silva* **Subsystem:** *MPG* **User Impact:** *None*
Panel Changes: *Few* **Documents:** *No* **Help File:** *No*

The status for the MCC Operator Rate Limit hardware button which is located between COWs 4 and 5 has been added to the 'LINAC RATE LIMIT' panel.