SGP MEMO NO. 40

DISPLAY SYSTEM PRIORITIES

Version 3

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NOTE: items in **bold face type** are new since the last version of this document.

The following are the functions to be added to the display system in the immediate future. The times in parentheses are estimates of the amount of work needed to implement the functions. Note that this does not include things like being interrupted to implement the new catalog record format or the capability to select disks for map input or output.

1. DISPLAY VALUE AND SKY COORDINATES OF MAP PIXEL. This program will allow the user to move a cursor on the IIS. The map pixel coordinates and intensity value will be dynamically displayed in the corner of the IIS image as the cursor is moved. When the user freezes the cursor by pushing on the data tablet pen, the sky coordinates will also be displayed. This program will not use the standard commands since it has no inputs. This program will get the pixel value by reading it back from the IIS image memory. **Thus, the reported value will have limited precision. For baseline-time arrays, this program will display the antenna numbers of the baseline that the cursor is sitting on. Also, when the cursor is frozen, the time will be displayed.** (1 week assuming appropriate coordinate conversion routines are available)

2. **DISPLAY FULL PRECISION MAP VALUE AND SKY COORDINATES OF MAP PIXEL. This will be similar to the above function except that it will read the pixel value from the disk map. It will thus report the pixel value with full precision. (0.5 week)**

3. CALCULATE MAP STATISTICS. This program will calculate the sum, mean, and RMS of the map pixels within a rectangular map subsection. Inputs to the program will be through the standard commands. One of the commands will specify the desired subsection location. The user can supply coordinates to this command, or he can type an exclamation point to activate the interactive box specification on the IIS. When the GO command is given, the program will use the data from the disk map for doing the calculations. (1.5 weeks)

4. DYNAMIC PROFILE PLOTS. This program will be similar to the IMPS cross section plotting program except that it will also dynamically display vertical cross section plots on the VT-11. **When the program starts up, it will ask the user whether he wants horizontal or vertical cross sections.** (2 weeks)

5. **HISTOGRAM PLOTS ON VT-11. This program will allow the user to interactively specify a box on the IIS screen. It will then use the videometer to calculate the histogram of the specified image subsection. The histogram will be plotted on the VT-11. (1 week)**

The following are additional functions whose priority is yet to be determined:

6. LABEL IMAGE ON IIS. This will put tic marks and coordinate labels into a graphic overlay plane. (2 weeks)

7. BASELINE-TIME VISIBILITY DISPLAY. This will display a baseline-time array as an image on the IIS with labelling on the time axis. The user will be able to point to a baseline and be told which baseline it is. Also, there will be a capability to display the baselines with different sorted orders. (4 weeks)

8. ARBITRARY ANGLE PROFILE PLOTS ON VT-11. This program will allow the user to interactively specify an arbitrary line on an image displayed on the IIS. The corresponding profile plot along this line will then be displayed on the VT-11. This will be done by reading the necessary pixel values back from the IIS refresh memory. It will probably take some tens of seconds to produce the plot. (3 weeks)

9. ARBITRARY ANGLE PROFILE PLOTS ON VERSATEC OR ZETA. This program will use the standard commands to allow the user to specify an arbitrary line in a map either by typing the coordinates or by interactively specifying the line on the IIS. When the user types the GO command, the request for the hard copy profile plot will be entered into a queue of "background" jobs to be done. The map data will be obtained from the disk and the output will be able to be sent to the Versatec or Zeta. (4 weeks plus the time needed to adapt the MAPCON system to control things in DISPLY)

10. SPECTRUM PLOTS. This will be similar to the above two functions except that a point within an RA-DEC map will be specified and the frequency profile at that point will be plotted. (2 weeks)

11. X-V IMAGE DISPLAY. This will display an image on the IIS where one coordinate is a spatial coordinate and the other is velocity/frequency. (1 week)

12. RULED SURFACE PLOTS. (?)

13. MAP ARITHMETIC. (?)

14. CONTOUR PLOTS ON THE VERSATEC. This will basically be a conversion of the existing IMPS contour function. (4 weeks assuming we have the new catalog record format to deal with)

15. LINE PRINTER DUMP. This program will use standard commands to specify a map subsection. The numerical map values will be put into a file which is automatically spooled to the DEC-10 line printer. The user will be able to interactively specify the map subsection if the map is displayed on the IIS. This program will work on both ordinary maps and baseline-time arrays. (3 weeks)