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A Fortran IV plotting program utilizing an on-line printer

CHAYES (1971) has briefly summarized the problems encountered in the design of a routine for the storage and retrieval of large sets of chemical data. Although most geologists are probably not concerned with working with tens of thousands of rock analyses, the problems discussed by Chayes are a real concern to those researchers who are interested in setting up limited data storage systems that include routines for data reduction and data presentation.

At the University of Houston a programme has been initiated to store rock data on magnetic tape. Lacking a computer-driven automatic plotter, we have had to resort to the on-line printer for graphical presentation of selected data. Plotting options include: a histogram with a variable number of intervals, an X–Y plot, and a ternary plot. As many as 5 variables can be combined to generate one variable for plotting.

This programme offers several advantages over those plotting routines with which the author is familiar. The first 62 samples can be assigned unique, one-character symbols—assuming use of an IBM 029 key punch. A total of 160 samples can be plotted with samples 63 to 160 indicated on the plot by an asterisk. An option is available to allow the operator to select the symbol to be associated with each sample so that the same symbol can be assigned to similar samples. A listing that includes assigned symbol, plotted values, and identification of each plotted sample accompanies each plot. A table indicating the number of plotted samples, the number of overlaps, and the position of each point not plotted because of overlap follows the X–Y and the ternary plots. For each histogram requested, the number of samples in each interval and the symbols of the samples within the interval are plotted. All plotted variables for each plot are identified and numerical scales are printed adjacent to the reference axes.

The programme can be used as offered, or it can easily be added as a subroutine to existing programmes. At the University of Houston, the plotting routine has been

added to our programme for the calculation of petrologic parameters. This addition has enhanced our ability to handle large sets of data and to be able to update existing plots as new analyses become available.

If an automatic plotter is available there may be little need for this routine. However, at those institutions lacking such a facility, the routine should prove useful in a variety of situations. The programming has been kept simple to enable changes to be made easily. Modifications to allow other calculations or data transformations could be easily accomplished and the total number of samples handled can be increased or decreased to match the storage capabilities at a given institution.

A programme listing an example of the data input sequence and copies of plots will be sent upon request.

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