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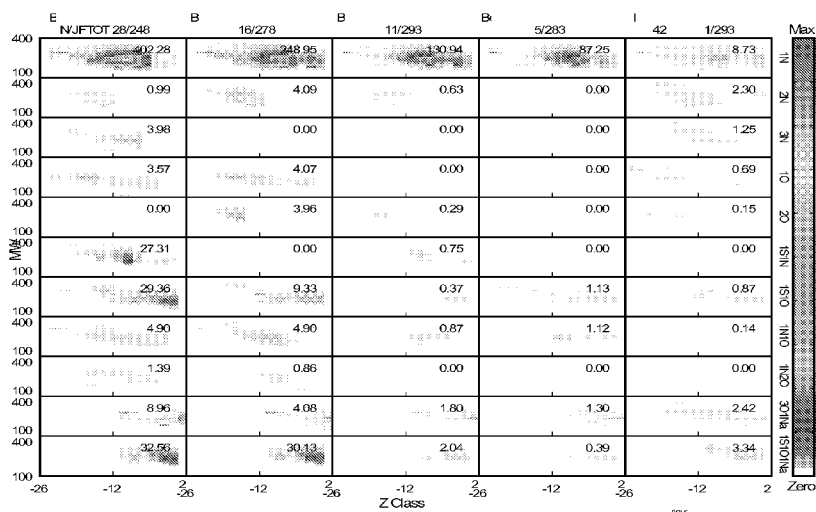


FIG. 1

(57) **Abstract:** Systems and methods are provided for characterizing kerosene fractions in order to determine whether the fractions will satisfy a desired thermal breakpoint specification. Additionally, hydrotreating conditions can be determined that will result in a hydrotreated kerosene fraction that satisfies the desired thermal breakpoint specification. The hydrotreating conditions can be determined based on a model constructed from data corresponding to a plurality of reference samples. The model can include data for compositional groups within the reference samples. The data for compositional groups can be derived from Fourier transform ion cyclotron resonance mass spectrometry data or from another suitable characterization technique.