APPENDIX J

ACTIVITY ANALYSIS OF TRANSPORT REFRIGERATION UNITS

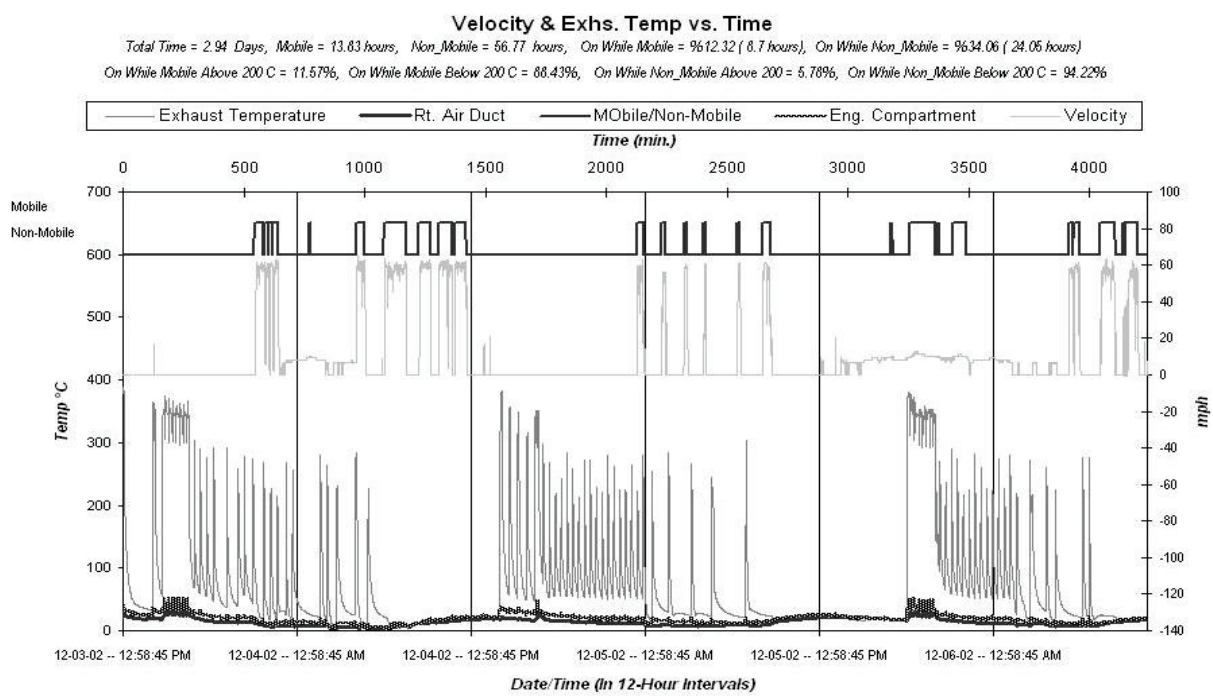
ACTIVITY ANALYSIS OF TRANSPORT REFRIGERATION UNITS

This project was conducted by the University of California - Riverside, College of Engineering Center for Environmental Research and Technology. The final report for this project had not been completed as of the publication of the staff report for the proposed TRU ATCM. The purpose of the project was to study diesel engines that are used in transport refrigeration units (TRUs). The primary objective was to characterize duty cycles and operating parameters of diesel-powered TRUs operated in assorted real-world applications.

To achieve that goal, UCR worked with several companies that allowed them to put data loggers on their operating units. Twenty-seven trailer TRUs were monitored while delivering a variety of goods over inter and intra-city routes from an egg distribution company, a grocery distribution company, and a wholesale restaurant supply company. The data loggers recorded the exhaust temperature of the TRU as well as the temperature in the refrigerated compartment as a function of time. An overlay of the global positioning system (GPS) data as a function of time allowed an analysis of whether emissions occurred while the TRU was on the road, or the TRU was stationary and presumably in a distribution center. From these data the cumulative time that the exhaust temperature spent as a function of temperature was calculated to help choose suitable control technology.

An example of the time series plots for a data logger output is show in Figure J-1, below. Results show that the units spent most of their operating time while stationary and presumably at the distribution center.

Figure J-1



The frequency distribution of the exhaust temperatures shown in Figure J-1 is shown in Figure J-2.

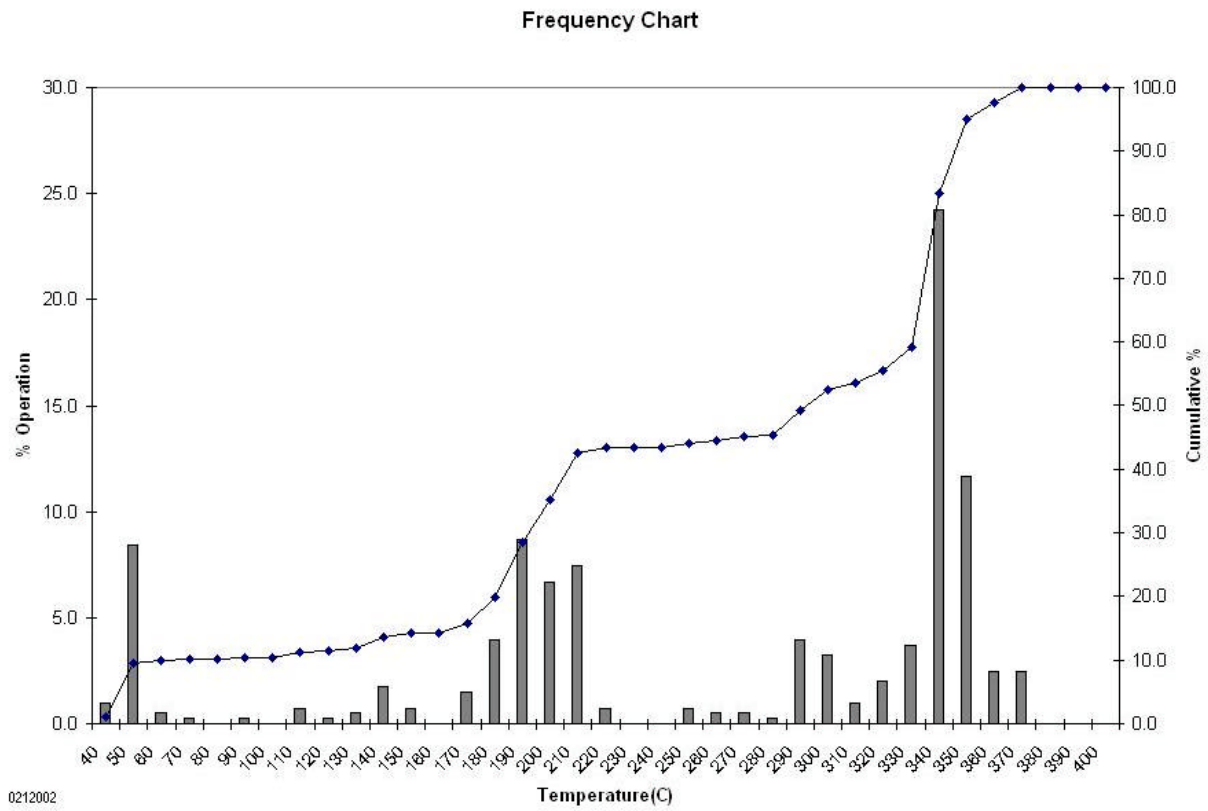



Figure J-2