power during an emergency, the tags can continue to operate for at least 72 hours from the charge stored in the capacitor.

The design of the RF identification tags is based on a microcontroller chip. This design is amenable to easy and inexpensive integration of sensors. For instance, digital temperature sensors could be included within the RF identification tags. In that case, the information provided to the central station could also include the temperature of the wall, roof, or other portion of the structure where the tag is located. The temperature would be an additional indication of the integrity of the structure and progress of a fire through the building. The RF identification tags can be encapsulated for protection against water, smoke, and shock, and can be made from components that withstand extremes of temperature.

Most of the hardware and software of the system have been tested in a laboratory, and limited field tests have been performed. At the time of reporting the information for this article, several fire departments had expressed interest in this system.

This work was done by William Larson of **Kennedy Space Center** *and Pedro Medelius, Stan Starr, Guy Bedette, John Taylor, and Steve Moerk, of Dynacs Engineering Co. Further information is contained in a TSP (see page 1).* *KSC-12079*

Software for Displaying High-Frequency Test Data

Marshall Space Flight Center, Alabama

An easy-to-use, intuitive computer program was written to satisfy a need of test operators and data requestors to quickly view and manipulate high-frequency test data recorded at the East and West Test Areas at Marshall Space Flight Center. By enabling rapid analysis, this program makes it possible to reduce times between test runs, thereby potentially reducing the overall cost of test operations. The program can be used to perform quick frequency analysis, using multiple fast-Fourier-transform windowing and amplitude options. The program can generate amplitude-versus-time plots with full zoom capabilities, frequency-component plots at specified time intervals, and waterfall plots (plots of spectral intensity versus frequency at successive small time intervals, showing the changing frequency components over time). There are options for printing of the plots and saving plot data as text files that can be imported into other application programs. The program can perform all of the aforementioned plotting and plot-data-handling functions on a relatively inexpensive computer; other software that performs the same functions requires computers with large amounts of power and memory.

This program was written by Jason L. Elmore of **Marshall Space Flight Center**. *For further information, contact the Marshall Commercial Technology Office at (256) 544-2615.*

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