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GPS ON THE JOB IN MASSIVE WORLD TRADE CENTER CLEAN-UP

Jul 1, 2002 12:00 PM, By JACQUELINE EMIGH

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In late September of 2001, only weeks after the World Trade Center disaster, officials uncovered a criminal scheme to divert sheet metal beams from the Ground Zero rubble to Long Island and New Jersey. In late October, some 250 tons of scrap metal were found at unofficial dump sites in both those areas.

On November 26, the city initiated use of an in-vehicle GPS tracking system to monitor locations of trucks hired to haul the debris to Fresh Kills, the official dump site on Staten Island.

By then, FEMA and the City of New York were already looking hard for ways to improve work efficiencies at Ground Zero and ease traffic jams around the area.

Staging the trucks, signaling them into load zones in Ground Zero and out of it was a major operation handled by the (trucking) contracting companies under the watchful eye of the Department of Design and Construction-New York City (DDC-NYC). Recovery of human remains and evidence introduced another level of complexity. Occasionally, all work stopped for recovery, changing routes and playing havoc with traffic; says Yoram Shalmon, director of product management for PowerLoc Technologies, Toronto, Ontario, a subcontractor on the project.

In the weeks before launching the GPS system, the city relied on a paper-based system for tracking traffic and loading data. Police and several other agencies teamed up to monitor the trucks on their routes between Ground Zero through 20 to 30 miles of tunnels, bridges and highways to the dump on Staten Island.

All outbound trucks needed to be washed, wetted, and covered to prevent dust from flying into surrounding neighborhoods. Steel beams from the WTC's twin towers had to be sliced into manageable pieces. With plenty of heavy equipment and overtime, the costs of the recovery operation became extremely high; Shalmon says.

To get a GPS truck-monitoring system rolling right away, DDC-NYC and the New York Port Authority (NYPA) quickly identified several possible suppliers, viewed presentations from the candidates, and sent out a request for proposal.

In the end, the contract went to IDC-Criticom, a large alarm system wholesaler based in Minneapolis, and its two subcontractors: GPS hardware maker PowerLoc; and implementation specialist Mobile Installation Technologies (MIT) of Marietta, Ga.

Within three weeks, the system elements were in place, and nearly 200 trucks in New York City were being tracked in real time. Installed by MIT with assistance from PowerLoc and four trucking contractors, the solution revolved around PowerLoc's Vehicle Location Device (VLD). Each VLD unit costs about \$1,000.

VLD uses GPS antennas to monitor location, cellular wireless antennas to communicate, and multiple I/Os to track vehicle signals from engine systems, for instance. Signals are bounced to one of 24 GPS satellites, which in turn send the latitude and longitude of the truck back to the VLD.

In the WTC implementation, GPS information was then transmitted via Cingular's Mobitex Data Network to a 24-hour call center operated by IDC-Criticom. By running in a different frequency range from cell phones, Mobitex was able to provide sufficient wireless bandwidth.

Cellular access was in short supply in the Ground Zero vicinity because of high demand. Many services from Verizon, including basic telephone service, were down for six weeks or more, as a result of damage to cabling and other phone company equipment. PowerLoc's VLD also supports other wireless networks, however, including GSM and Cellemetry.

PowerLoc's ability to rapidly customize its software application was a significant help in getting the contract; notes Ray Menard, senior vice president of development for IDC-Criticom. The software recorded every trip and location, sending out alerts if the vehicle traveled off course, arrived late at its destination, or deviated from expectations in any other way. The customized application also included report generation tools that let DDC-NYC analyze efficiency, adjust and shift

resources, and compare fleet and vehicle performance.

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