



# Mobilization Movement Control (MOBCON): A Convoy Movement Planning and Scheduling System

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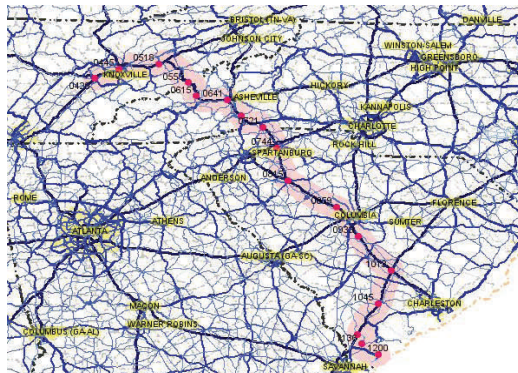
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In the mid-1980's, a series of exercises convinced the Army that any large scale mobilization of reserve forces, where individual units must move themselves and their vehicles over public highways to arrive at mustering stations before deployment, would result in chaos from the conflicts of independently scheduled convoys trying to use the same roads at the same time. In order to insure an orderly and efficient mobilization, U.S. Forces Command instituted a movement control system with Defense Movement Coordinators (DMCs) from each state's National Guard, who would be knowledgeable of local conditions, responsible for finding conflict-free itineraries, and would coordinate state support and approval for military movements.



An example of a MOBCON planned route.

Forces Command also commissioned the Center for

Transportation Analysis (CTA) at the Oak Ridge National Laboratory (ORNL) to produce MOBCON, an automated convoy scheduling tool that would retain visibility of all national convoy movements and construct efficient convoy itineraries. This tool is central to DMCs' duties and operates essentially as a roadway reservation system, as well as performing record-keeping and management functions.

## The MOBCON System

The MOBCON system consists of two components: a Windows-based client program and a server program. The client program operates on PCs located in every state, and includes local databases of state units and their movements. The MOBCON server component is located at the National Guard Readiness Center in Arlington, and contains the national transactional movement database and the highway network data.

The client software guides the user through the process of specifying the unit that will be moving, some information about the cargo being deployed, the timeframe of the movement, the origin and destination of the deployment, and the desired route that the convoy will use.

MOBCON also allows its users to modify their states' highway network data—either to reflect a temporary change, such as a construction slowdown or a bridge closure, or a permanent change in permissible highway routes, such as prohibiting convoys from a particular location. CTA routinely maintains the highway network data to reflect new roads and military facilities.

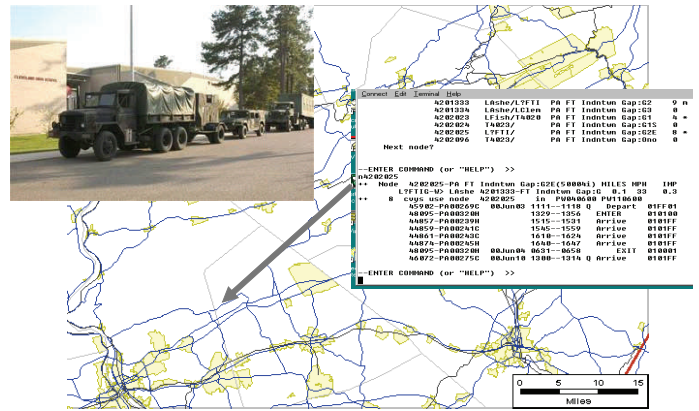
## MOBCON Development

The original MOBCON system was developed by CTA in 1986, and it originally ran on a “mainframe” computer. In 1999 the system underwent a major revision—where it was transformed into the “client-server” architecture which still exists today. The current architecture presents several challenges which the Army National Guard (ARNG) and ORNL are addressing at this time.



First, the client-server architecture is one that is difficult to maintain—both from the software and data perspective. With each of the states having the MOBCON client software installed on one or more PCs within their state, providing updates that must be applied simultaneously to all computers is difficult. Likewise, if changes in data are made at one location, it is difficult to ensure that the changes are simultaneously “seen” at all of the other MOBCON users' locations.

As a result of these issues—plus the ARNG's desire to maintain a robust, flexible system—MOBCON has entered a modernization phase. The focus of this effort will be to transform the existing MOBCON functionality into a completely Web-based system. The current PC-based client functionality will be replaced with a series of Web applications that allow the



Convoy routing information from MOBCON.

convoy planners to accomplish their work directly on a MOBCON server. A relational database management system (DBMS) will be implemented on the server—eliminating the need for transferring data that is currently stored in “flat files” between the client PC and the server. The DBMS will also make it easier to implement graphical displays that can better depict for the convoy planner his route, restrictions, timing, and conflicts—as well as other convoys that may be moving along the highway network. “Hooks” into MOBCON will be developed to allow electronic interfaces with other planning, tracking, and execution management systems. These interfaces will be exposed to authorized systems via a series of Web services.

## Use of MOBCON

Although there is now little concern about a rapid and massive mobilization, MOBCON remains in continuous use under the sponsorship of the Army National Guard's Logistics Directorate to manage routine movements and facilitate emergency response, handling approximately 11,000 convoys in 2007.

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