



FLEETMANAGEMENT

S E R V I C E S

MOBILE DATA COLLECTION DEVICE *INSTALLATION, USERS, AND SERVICE MANUAL*

Version 1.0

November 1, 1998

Table Of Contents

1. FCC INFORMATION.....	3
1.1. FCC Notice	3
1.2. FCC Identification	3
1.3. FCC Control Point.....	3
2. INTRODUCTION.....	3
3. INSTALLATION	5
4. OPERATION.....	5
5. SERVICE	5

1. FCC Information

1.1. FCC Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.2. FCC Identification

The FCC identification for the Mobile Data Collection Device is **XXXXXXXXXX**.

1.3. FCC Control Point

The location of the Network Information Processing Center is always the FCC control point even though only mobile vehicles will transmit under part 90. All receive sites for part 90 transmissions are controlled by the Network Distribution Center (NDC). The NDC can signal mobile vehicles to cease transmissions at any time.

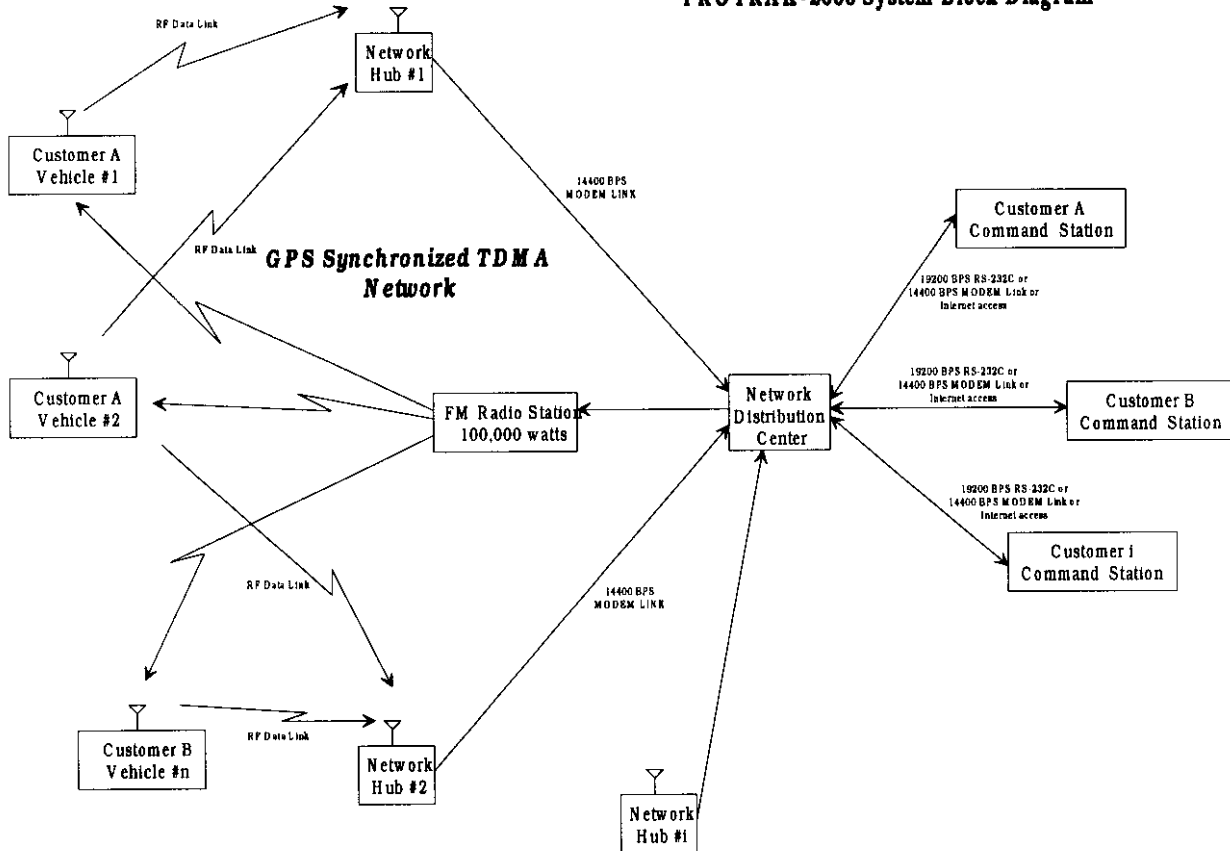
2. Introduction

Fleet Management Services, Inc. provides a wireless communications service intended to allow customers to acquire real-time vehicle information in a metropolitan area. Phoenix has been chosen as the first market for deployment of the system.

For the system to be successful, the technology deployed must be at a new price point well below competing systems. This is accomplished by amortizing the cost of the wireless infrastructure across a wide range of users, and using the Company's proprietary Time Division Multiple Access (TDMA) wireless network technology which facilitates cost effective devices in the vehicles and cost effective wireless infrastructure across the metropolitan area.

The block diagram below illustrates the system:

PROTRAK-2000 System Block Diagram



The brain of system is the Network Distribution Center (NDC) . The NDC is responsible for interfacing with the customers via a modem on a Public Switched Telephone Network (PSTN) line or the internet, and interfacing with the customer vehicles through Network Hubs and an FM Radio Station(s).

Information to be passed from a customer to his vehicle, or group of vehicles, is generated on the customers command terminal. The information is sent via modem over the PSTN or internet to the NDC. The NDC prioritizes the information and sends it with a modem over the PSTN to an FM Radio Station where the information is broadcast on a 67 kHz or 92 kHz FM subcarrier. The broadcast of the information is performed with precise timing defined by Global Positioning System (GPS) satellite navigation information. All vehicles in the network receive the FM subcarrier broadcast and decode the myriad of information. Each vehicle is provided a slot in time to broadcast its information and responses to command station requests. Each slot in time is unique so that no two vehicles attempt to broadcast at the same time. Vehicles control their broadcast timing very precisely through the use of GPS and FM subcarrier synchronization. When it is time for a vehicle to broadcast, it sends a 144 bit message. This information is received by at least one, and more typically several, Network Hubs. The Network Hubs demodulate the information and provide the data, via a modem, to the NDC over the PSTN. The NDC parses all received data and provides the vehicle location and status information for each specific customer to their specific command terminal over the PSTN or internet.

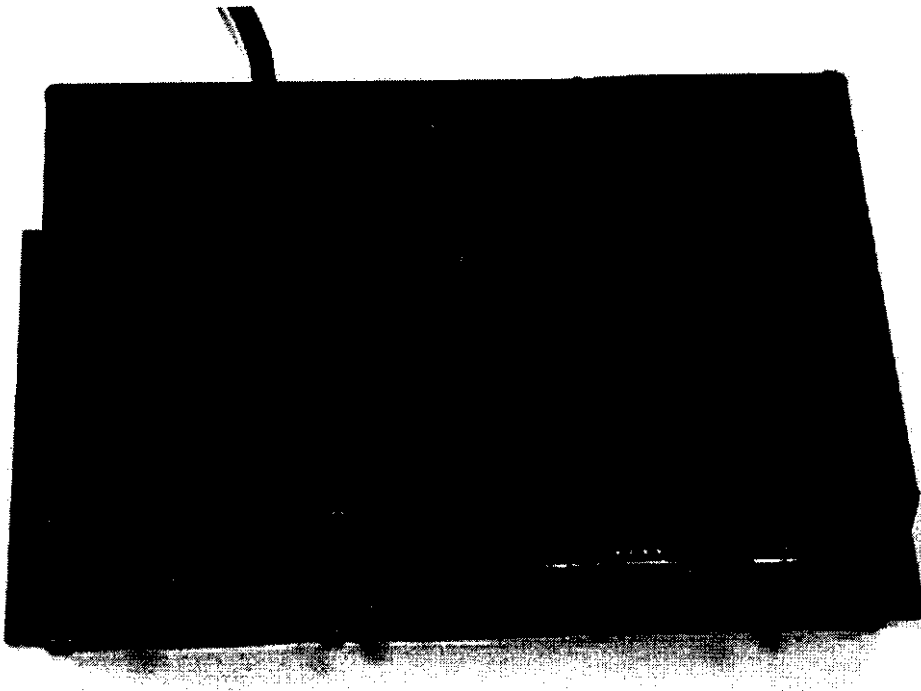
This system allows real-time tracking of vehicle location and status as fast as once each five seconds at a premium price. Typical customers will track vehicle location and status once each three minutes for the standard \$25 per month per vehicle price. Full text messages can be sent to or from each vehicle for another \$10 per month per vehicle. Vehicle locations are accurate to 5 meters through the use of differential GPS information provided by the FM subcarrier broadcast.

3. Installation

The Mobile Data Collection Device is easily installed in any vehicle. The connections for any vehicle are defined below:

1. +12 VDC Power
2. ground
3. accessory key position
4. run key position
5. battery voltage
6. reverse lights
7. speed sensor wire

The Mobile Data Collection Device can be mounted on its side or flat in any convenient location.



4. Operation

Operation of the Mobile Data Collection Device is automatic. The customer only needs to start the vehicle for continuous information monitoring and coherent broadcast of information to the NDC.

5. Service

None of the Mobile Data Collection Device components are user serviceable. All repairs must be performed by the manufacturer. Please refer all repair requests to the following:

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Chandler, AZ 85226
Attention: Sean Ford
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