CHAPTER 2
BACKGROUND

This chapter presents a brief history of the IVDS system and provides an overview of the CR work completed prior to the start of the decoder board software development.

2.1 Interactive Video Data Service System History
In January 1995, Mr. Fernando Morales, founder and CEO of Interactive Response Services company, contracted the Virginia Tech Center for Wireless Telecommunications (CWT) to design and develop the IVDS system. CWT divided the task into four functional groups: Antennas Group, Audio Group, RF Group, and Controls Group. The Antennas Group was responsible for designing a small antenna to efficiently radiate the RF signal. The Audio Group was responsible for designing a digital signal processing circuit to receive information that is embedded in the audio of a television program and then transmit the information. The RF group was responsible for designing a reliable one-way, wireless RF communications channel. Lastly, the Controls Group was responsible for designing the CR hardware and software to receive the RF messages and to forward them to the Host subsystem.

Additionally, Mr. Morales contracted the Grayson Electronics Company to manufacture the CC and CR subsystem hardware. However, during contract negotiations, Grayson Electronics presented its WMI, an available device that performed similar functions to the CR subsystem. To reduce design time, Mr. Morales decided to use the WMI and adapt it for use in the IVDS system.

2.2 Previous Cell Repeater Work
The following CR hardware and software was completed prior to the decoder board software development: WMI operating system software, WMI application software, prototype decoder board, and decoder board boot software. This hardware and software will be discussed in more detail, but a brief description of their functions is given here.

The WMI operating system software controls the operation of the CR. It has all the utility routines needed to initialize peripherals, to process data from peripherals, and to transmit data through serial ports.

Using the WMI utility routines, the WMI application software gets messages from the decoder boards, performs validity checks, and then puts the valid messages into an outbound queue for forwarding to the Host subsystem.

The prototype decoder board had all the necessary hardware components to decode intermediate frequency spread spectrum messages, and its boot software had all the utility routines needed to communicate with the WMI.