# Jacobsen Declaration Exhibit B

# Using Decoder Pro

How a decoder set-up program can make life easier/**Don Fiehmann**

**S**etting up a DCC decoder can a frustrating job. Questions arise, such as which CV should be changed and what value should be used. Is it hex, decimal or binary? You have to find the decoder manual, then page through it to find the correct information. The manuals are not always that easy to understand, but there is a solution!

Wouldn't it be nice if you could just sit down at a computer and have a program that would have all of the decoder information written in English? There would be slider bars to set the sound volume, drop down menus for choices with the functions. All of the decoder features would be shown on screens that you can page through. You could read in all of the decoder CV's values automatically and customize the alternate speed table with a mouse.

Once you were happy with the changes, you could then send them all back to the decoder with the click of a mouse and store all of the decoder data in a computer file so you could retrieve it later if the decoder developed amnesia. This program would, of course, run on a Windows, Macintosh, Linux or OS/2 machine. Now for the real kicker. What if there were a program that would do all this and it was *free*! I've got good news for you, such a program exists. It is called Decoder Pro

Decoder Pro is a program that was started as a grass roots project by a couple of members of the Silicon Valley Lines in San Jose, California. They saw a need for a program would make setting up a decoder easier and would run on many different platforms. It would be a program that was easy to change as new products came on the market. Java was selected to run Decoder Pro since it allowed cross-platform compatibility and could run on many different types of systems. Decoder Pro runs as a Java ap-

plication. Most newer computers come with Java installed. Java is also available free from Sun Microsystems. Both Java and Decoder Pro can be downloaded from the internet at no charge.

Decoder Pro is designed to interface with DCC systems through the serial port of a computer. First you have to set



The Start-up screen (*above*) shows the basic system set-up for LocoNet using the MS100 on Com2. On the next screen, one selects a decoder (*right*) or has the system identify it for you.
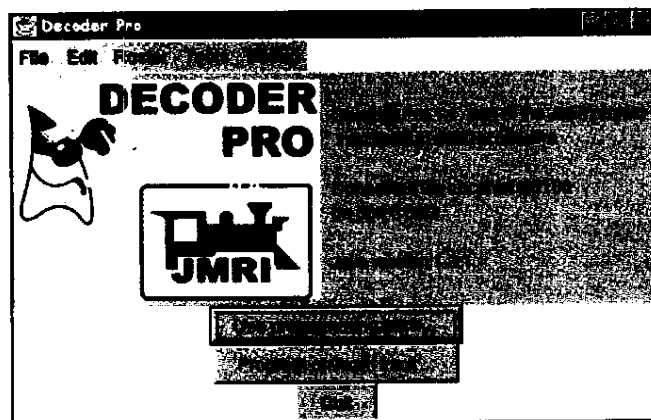


up communications between the computer and the DCC system. Normally all that is required is a serial cable between the DCC system and your PC or Mac. The program uses the program track via the DCC system to read and write decoder data. Decoder Pro also does OPS mode (on-the-fly) programming with some DCC systems.

One of the interesting aspects of this program is the project has been done by volunteers. It is a dynamic program that is still evolving. If the decoder you have is not on the list, there is information available on how to program-in your model decoder and then share it with the rest of the community of modelers using Decoder Pro. For more information or help there is a Yahoo group for Decoder Pro, the "JMRI group."

**Downloading**

The website for the download is http://jmri.source-forge.net/DecoderPro, or you can do a search for Decoder Pro on the web. This website has links to enable you to download Decoder Pro and Java if you need it. The website also has a quick tour of the program that walks you through its operation and links to other Decoder Pro information. Print out the information on the website and use it as a quick guide to Decoder Pro. A manual is also available online.

I have three PC's, an older 233 MHz that I use on the layout, a 1 GHz desktop and a 700 MHz laptop. I downloaded Decoder Pro and put it on a CD so I could install it on all three PC's. The older PC, running Windows 98 required me to download the Windows version of Java; the two newer PC's running Windows ME already had Java installed. Decoder Pro ran fine on all three machines. Once installed, Decoder Pro loaded in a few second on the newer PC's, but over a minute on the older one. I would advise at least a 100Mhz machine. If you have
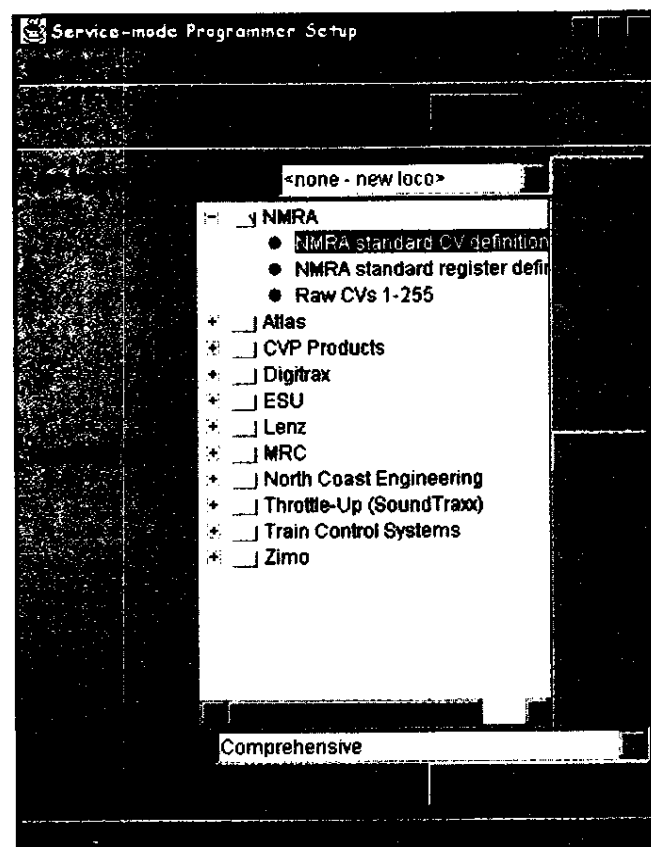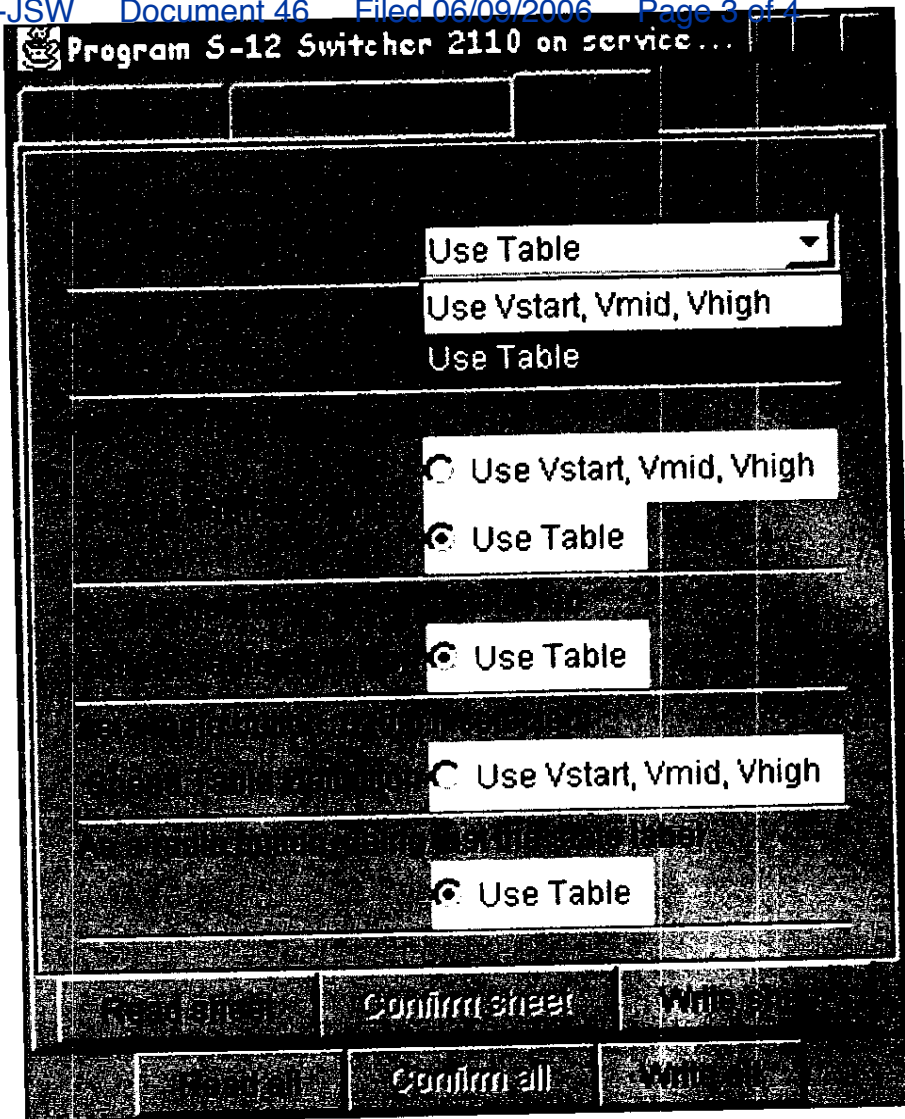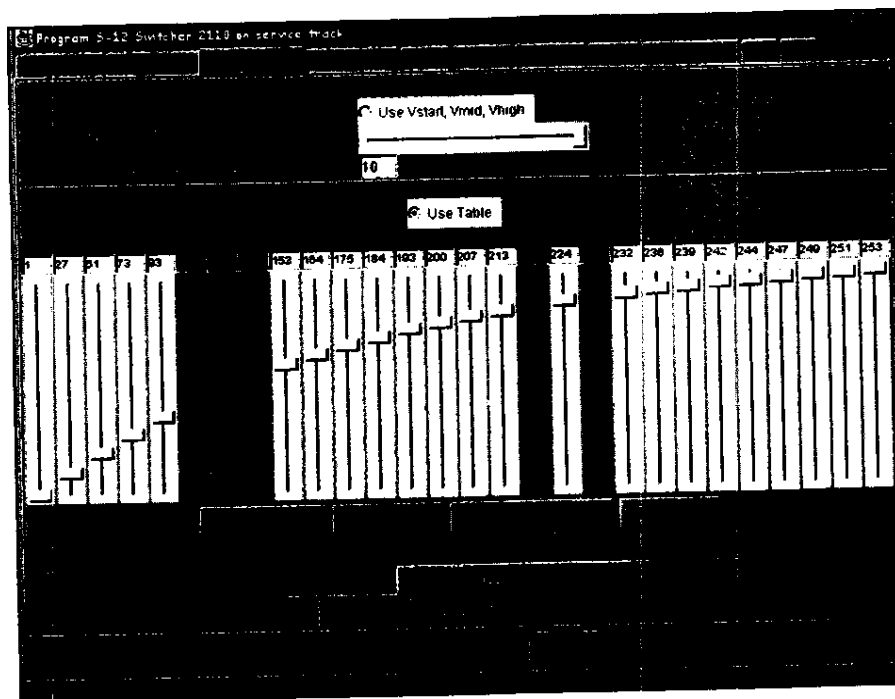
# Decoder Pro
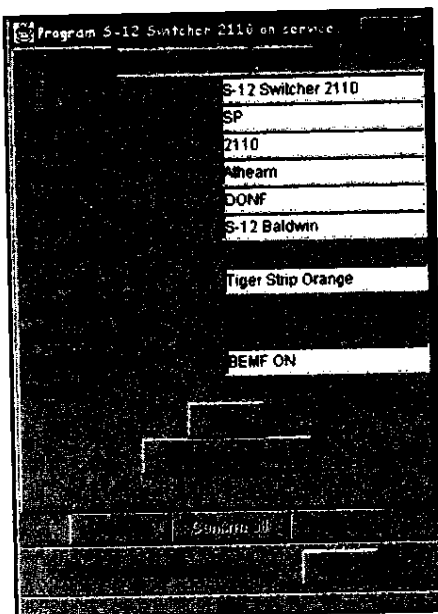
**Sampling the program: the Roster Entry (*left*) is where the information is added for the locomotive's file. To select the way the speed is determined (*right*), the green selection at the top has a drop-down menu.**

an older machine, once you start loading the program watch the disk activity light to be sure the program is loading.

The first time Decoder Pro is loaded you need to specify the DCC system it will be operating. Selections listed are brand of system, model and then the computer serial port. Both my NCE and Digitrax Zephyr systems were listed. (Digitrax systems need an MS100 or LocoBuffer to connect the to the LocoNet.). Then exit and restart the program. When the program comes up, you have some choices. If you have a locomotive that is on file, you can select it with a drop down menu or have the program find the file by clicking on "Ident." If it is a new locomotive, either enter the brand and type of decoder or click on "Ident" and the program will read the information from the decoder.

From here you can start setting up the way you wish to have the decoder function. If you've read-in data from a decoder beforehand, the program can compare the locomotive address with the files and retrieve all of the data. Most of the common decoders are listed. There is a generic NMRA decoder listed that will work in most cases if your decoder is not on the list. Once the decoder type is established you can click on "Open Programmer." The programmer includes a number of formats; most choose "Comprehensive," which gives you the most data with multiple panes or "sheets" (screens) of information. There is also a basic format and one for clubs.

**The Alternate Speed table can be set with a mouse. This graph is showing an update. It is white when the decoder and computer data are the same, yellow when it hasn't read it yet, and red is a time out error. Decoder Pro will go back and re-read the red-marked CV's.**

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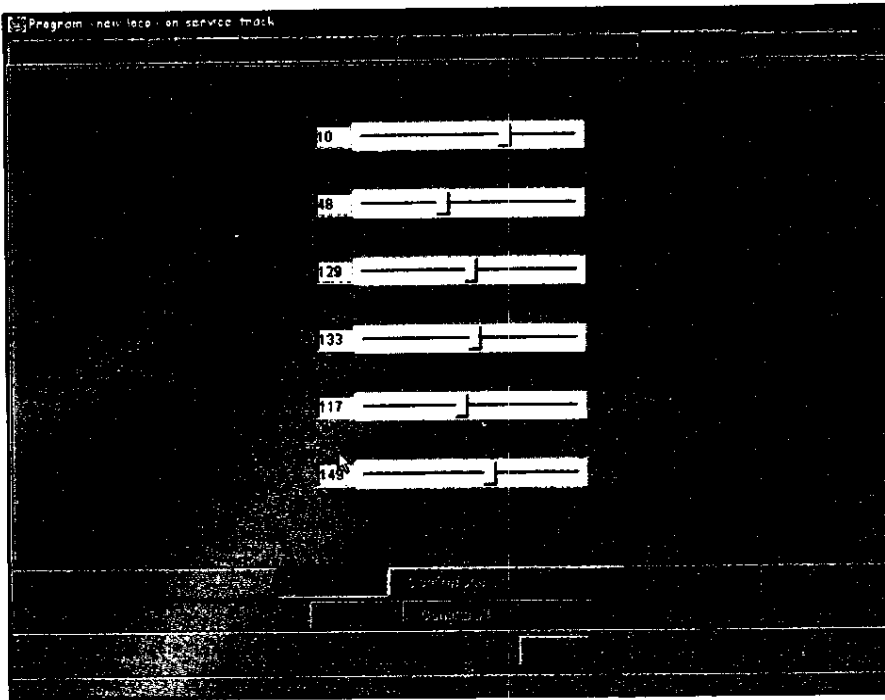
It is easy to make changes in the volume levels (*above*) with a mouse. The orange shows that the settings have been changed but not sent to the decoder yet. The white shows the computer and decoder are the same. The CV information (*bottom*) is available. This one is shown while updating the decoder. Individual CV's can be read or changed on-screen.



Here is where the fun begins. The first sheet is for the basic information about the locomotive and decoder. You can set the address to short or long address. Most of the program works with words and not CV numbers. (There is a sheet available that does list all of the CV's and their values.) When you type in the address or other information the box turns orange. The program uses colors to tell the status of each entry. Orange for edited values, yellow when not sure that the value agrees with the decoder, white when the data is trustworthy and red when there has been an error or the data is untrustworthy. At the bottom of each sheet is a couple of buttons that will either read the data from the decoder or write the data to the decoder. You can select to read or write all the CV's or just those on the active sheet.

At the very bottom, a line of information shows what the program is doing, like the CV it is reading or if there is a timeout error. When finished it shows "OK." The slow speed of reading back CV's is due to the way that data is retrieved and not related to computer speed. The DCC system interrogates the decoder by asking, "is this the value in the CV." It steps through all the values until the asking value and the CV value match. The decoder then responds by turning on a pulse to the motor. This causes a change in current flowing to the decoder that is detected by the DCC system. The CV value is then sent to the computer.

There are a number of ways to modify a decoder's speed, either with CV's 2, 5 and 6, or the 28 alternate speed table. When you read the 28-step table, the program slowly goes through each step. When you start to read the table the color changes to yellow. As each step is read it changes to white. If the program fails to read a CV, it is changed to red. When the program finishes the table, it will go back and try to get the steps it failed on the first time. The program is tenacious.

While setting up files of my locomotives, I put an S12 switcher on the program track and started to read-in the data. I knew it had an NCE decoder, but things did not seem to work out right, so I let the program select the brand and type of decoder. It came up as a Lenz B-EMF decoder. At that point, I had to pop the shell off the switcher and guess what? Much to my surprise, it had a Lenz 1024 decoder. So much for a "senior moment."

Using OPS (on-the-fly) programming is very handy when setting the volume on my SoundTraxx decoders. The page for volume has slider type controls for all the sounds. Move the "knob" with the mouse then hit "Write sheet" and listen to the change. This is a lot quicker than trying to look up the CV number in the manual and keep track of all the other sound settings.

When you set up a file for a locomotive there is extra information that you can include in the file that is not stored with the decoder. This information is such things as the make of the locomotive, its type, extra comments about the decoder and the locomotive's railroad. You can even put in the owner's name. This may not be to important on a home layout, but in a club it could be. Put a locomotive on the program track and have the computer check to see if the locomotive is on file. If it is on file, the locomotive's owner could be determined. You can even keep track of when the locomotive was last serviced.

A computer and DCC are becoming common fixtures in layout rooms. Decoder Pro is another way these two can work together to help maintain and run the equipment on a layout. ☎